

Your Gateway to Excellence



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ABOUT US

Since 1960 ODE has been providing customized design and production of solenoid valves for manufacturers following our fundamental principles of quality, adaptability and reliability.

The current product portfolio, including a wide range of solenoid valves, results from the continuous refinement of technical innovations to reflect the needs and practical experiences of our customers.

More than 50 years of experience in fluid control systems allow us to satisfy several sectors like Vending and Coffee machines, Car wash, Automation, Medical, Food and Beverage, Chemical and Water Treatment.

This is not the end of the story but only the beginning!
WE ARE READY FOR THE FUTURE.

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GENERAL CONDITIONS 21-11-2019 REV. 1.0

1 - Subject

The present conditions represent all current and future contractual relations for ODE product suppliers.

2 - Contract Preparation

2.1 The supply contract is concluded with the emission of order confirmation on behalf of ODE. If ODE does not accept part or all of the order, modifications to the order required will be sent in writing to the Client within five working days from the date of receipt. After 24 hours without receiving notification of objection from the Client, the modifications introduced by ODE will be deemed to be accepted.

3 - Exclusions

3.1 System design, installation of supplied devices, specific tests, instructional courses, assistance getting started and all other conditions that are not agreed upon are not included with the delivery, unless otherwise stipulated in writing.

3.2 In addition, taxes, exportation fees and any other additional expenses are not included in the price, unless otherwise specified and agreed upon by all parties.

4 - Technical data, design and documents supplied

4.1 The information provided by ODE in catalogues, brochures, technical sheets or other illustrative documentation are only suggestive. This information is not binding unless specifically mentioned in the delivery.

4.2 ODE reserves the right to make modifications at any moment without warning in order to make technical and constructive improvements.

4.3 The Client is expressly committed to not use images, technical information and other aspects of the delivery for various reasons other than those mentioned in the contract, they remain property of ODE and the Client cannot provide them to third parties or reproduce them without written authorization.

5 - Transport, packaging and consignment

5.1 Transport: the transportation of goods, if not otherwise stipulated, are packaged in standard packaging, the Client bears all risks.

5.2 Package: the package is not received by return to sender, unless agreed upon in writing among parties.

5.3 Consignment: the date of consignment and postage are not legally binding; in any circumstance, ODE is not liable for lateness of consignment:

a) If the Client does not supply the details or materials necessary for the delivery before the deadline or requests variations to be made to a package or is delayed in answering requests of design approval.

b) If caused by reasons other than the good will and diligence of ODE, including lateness of subcontractors, that blocks or causes the excessively late consignment according to established terms. Not including the specifications of article 13 below, regarding products not consigned to the Client for reasons for which they are liable or otherwise, for causes outside the responsibility of ODE, the Client will accept the risks and expenses for custody.

5.4 Claims: no claims will be accepted if sent after eight days from the receipt of goods, unless otherwise agreed amongst parties.

5.5 If the Client is not up to date with payments, ODE has the right to delay all consignments until the Client has paid the sum owed.

5.6 If the ODE consignment is delayed where parties have previously agreed that ODE must pay a penalty fee for late consignment, the client cannot ask for compensation for damages caused above the penalty fee agreed upon.

6 - Conformity and tests

6.1 A multilingual copy of the "Certificate of Conformity" regarding catalogue information, indicating the information of Client's order and of the ODE delivery note is available if requested by the Client within the delivery contract.

6.2 Special deliveries according to Client requests are to be agreed upon by parties and be executed at the expense of the Client in the ODE headquarters.

7 - Prices, Discounts and Reparations

7.1 The prices indicated on the price list do not include VAT (value added tax).

7.2 Price variability: ODE reserves the right to vary prices without any warning; the price lists are not binding. The prices can also vary if the quantities ordered are reduced or requested to be delivered in a shorter time period than previously stipulated.

7.3 The offers emitted by ODE are referred to a specific consignment, they are not applicable for other deliveries of the same products if not otherwise specified in the supply contract.

7.4 All the discounts given by ODE are valid for thirty days from the date of proposal. Unless otherwise agreed by all parties, discounts are irrevocable and expire after thirty days automatically according to article 1329 of the Italian Commercial Code.

7.5 Minimum Order: Direct orders below the following net sums are not accepted
€300,00 for OEM clients

€300,00 for distributors and resellers

Price supplements will be applied to orders under this sum.

8 - Payment

8.1 Unless otherwise stipulated payments must be made by the Client within the indicated terms of the invoice through the chosen credit institution.

8.2 For administrative reasons no rounding off will be accepted.

8.3 If the Client's payment is late he's bound to pay the interest according to the Italian Legislative Decree N° 192/2012, without necessity of statutory notice from ODE S.r.l., with calculation deriving from the above mentioned Decree and based on the currently applied interest rate as per the mentioned Decree.

ODE has the right to request compensation for major damage caused and the termination of the contract according to the following article 13.

8.4 Any future disputes that occur between the parties do not exempt the Client from the obligation to observe the terms and conditions of payment.

9 - Returns

9.1 Returns are not accepted if not authorized beforehand by our personnel, as a result of a written request from the Client. The transportation costs will remain at the expense of the Client. The value of the goods returned will be reduced by a percentage to be established, never below 20%, to account for costs incurred during testing and returning products to storage.

9.2 Similarly returns for repair or substitution of products must be previously authorized by our personnel through a written notice by the Client regarding product defects; if the defects are covered by the guarantee, article 10 is applied.

10 - Warranty

10.1 ODE guarantees the conformity of products supplied, the products are free from defects in materials and/or workmanship and they conform to all indications in the catalogue.

10.2 The warranty lasts 12 months beginning from the date of consignment of products and for products or components substituted under warranty, from the day they are consigned to the Client.

10.3 Within this period the client may denounce defects through relative non conformance documentation according to the terms of article 9.2. ODE is committed without obligation - within a reasonable time period in relation to the product of disputes - to repair or substitute the products or parts of the product that have proved dysfunctional free of charge; the client is obliged to send the dysfunctional products in an appropriate package, unless otherwise stipulated. If ODE substitutes the products before receiving the dysfunctional products, the Client is then obliged to return the dysfunctional products or articles to ODE unless otherwise stipulated referring to the repair/substitution bill in the returned consignment note guaranteed by ODE. ODE reserves the right to charge the Client for costs of products substituted and/or transportation fees if necessary, following testing, for products that are not covered by the guarantee.

10.4 The substitution and reparations are undertaken by ex-works; the costs and risks of transport of dysfunctional products are the responsibility of the Client.

10.5 ODE excludes any warranty on products mounted or utilized incorrectly or non-compliantly to indications in the catalogue or in the instructions for usage and maintenance; in addition the warranty terminates if the products are stored incorrectly or exposed to insufficient maintenance or have been modified without ODE authorization.

11 - Compliance clause

The Customer will not sell, re-export or transfer any product or technical information or service provided under this Agreement to any other country except in full compliance with all applicable government requirements, including but not limited to the applicable sanctions and economic constraints administered by the US Treasury Department and in compliance with the applicable export control measures administered by the US Department of Commerce and the US Department of State, any other US government agency and the measures administered by the European Union or agencies governmental bodies of any other country. Without limiting the foregoing, the Customer will not sell, re-export or transfer any product or technical information or service provided by the Supplier to the disputed Ukraine Crimean region, to Iran, North Korea, Syria, Cuba and North Sudan, including entities or persons in those countries, directly or indirectly.

12 - Suppliers Responsibility

12.1 ODE is thereafter responsible for the correct functioning of products supplied regarding characteristics

and performance as indicated by the catalogue and/or relative documentation.

12.2 ODE is not responsible in any way for defects in machine operations or systems caused by the Client or third parties to ODE products, even if these products have been mounted or connected following diagrams and illustrations produced by ODE.

12.3 The Client cannot request compensation for indirect damage, lost profits or loss of production caused by the product, nor can they receive compensation above the value of the products supplied, with the exception of any aspects covered by the Consumer Code (Legislative decree 6 September 2005, number 206), and by article 1229 of the Italian Commercial Code.

13 - Retention of Title

13.1 The products supplied remain the property of ODE until the Client pays the agreed sum in full. If the Client does not pay, ODE reserves the right to request the restitution of the goods by the client, in this case they lose their right of ownership.

14 - Resolutive clause expressed and resolutive conditions

14.1 The Supply contract will terminate in accordance with article 1456 of the Italian Commercial Code following a simplified declaration written by ODE exercising the right of the resolutive clause expressed, if the client:

- a)** omits or delays payments owed. Is late or does not consign the products within the terms stipulated by the previous article 5
- b)** does not observe the obligations of copyright as stipulated in the previous article 4

14.2 The contract will terminate if the Client is in liquidation.

15 - Applicable Laws

15.1 The Supply contracts, including those for overseas Clients, are regulated by the present general conditions and the Italian Law.

16 - Court of Jurisdiction

16.1 The Court of Jurisdiction of Milan is competent if any dispute regarding the execution, interpretation, validity, resolution and termination of supply contracts between parties filed by the Client; if the action is filed by ODE any Court according to the law is competent in addition to the Court of Jurisdiction of Milan.

ENGINEERING INFORMATION

FUNCTION TERMINOLOGY AND VALVE TYPES

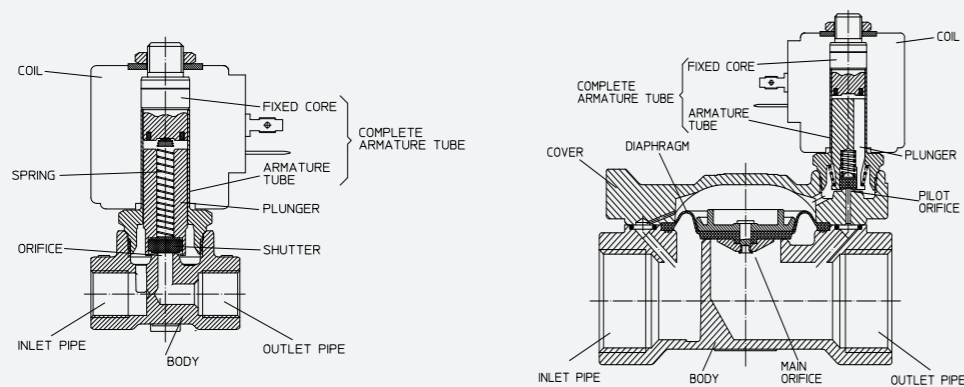
Glossary

This chapter illustrates some of the technical terms used in the ODE catalogue.

Fixed core: component in ferrous-magnetic material which, due to the effect of a magnetic field generated from the coil, attracts the plunger. **Plunger:** component in ferrous-magnetic material which, under the effect of a magnetic field, moves towards the fixed core causing directly or indirectly the switching of the solenoid valve. Often the plunger houses one or more shutters which open or close one or more orifices for the functioning of the solenoid valve. **Complete plunger:** this is the grouping of the plunger, the shutters and any springs. **Armature tube:** a guide tube in which the plunger runs. **Complete armature tube:** the assembly of fixed core and armature tube, generally welded or assembled with rolling, threading or other means. **Coil:** consists of a copper winding, a support bobbin and a holder in ferrous-magnetic material. The whole is covered over with insulating material from which the electrical connections emerge, which may be different depending on the type of coil. (see COIL INDEX). The winding generates the magnetic field while the ferrous-magnetic holder closes the magnetic circuit constituted by the holder itself, the plunger and the fixed core. **Shutter (or sealing gasket):** this component may be housed directly in the plunger, in a gasket housing, in the piston, or be part of the complete diaphragm. With a movement the shutter opens or closes an orifice thus permitting or preventing the flow of fluid. Certain valves have more than one shutter, for example the three way direct action solenoid valves: the two shutters, housed at the ends of the fixed core, alternately open and close the inlet and outlet orifices. There are also two shutters in the combined operation and in the pilot control solenoid valves, one acting on the pilot orifice and the other on the main orifice. Sometimes shutter function is carried out directly by the diaphragm or piston.

Note: In the same solenoid valve there may be shutters made of different materials.

Orifice: This is a holed component which is opened or closed by the shutter, permitting or preventing the passage of fluid. It may be either machine-tooled or inserted. The main orifice of a solenoid valve is the one permitting maximum flow of the valve itself while the pilot orifice, when opened or closed due to an unbalance of pressure, leads to opening or closure of the main one by means of a diaphragm or a piston. **Diaphragm:** an element of mixed action or solenoid valves with pilot control which opens or closes the main orifice due to the effect of different pressures on its surfaces. **Complete diaphragm:** this is the grouping of components united to the diaphragm such as diaphragm bearings, rivet etc. **Piston:** an element of mixed action or solenoid valves with pilot control which opens or closes the main orifice due to the effect of different pressures on its surfaces. **Complete piston** this is the grouping of components united to the piston such as rivet, shutter etc. **Body:** central part of the solenoid valve. The pipes are on the body and the main orifice, generally, is inside. In some cases the body is divided in two parts: for example in solenoid valves for drink dispensing there is the upper body with the inlet pipe and the lower body with the main orifice and the outlet pipe. **Cover:** this is found in certain solenoid valves, generally in all with pilot control ones, the cover of which normally houses the pilot orifice. **Pipe:** a mechanical component for connecting the solenoid valve to inlet, outlet and exhaust pipes.



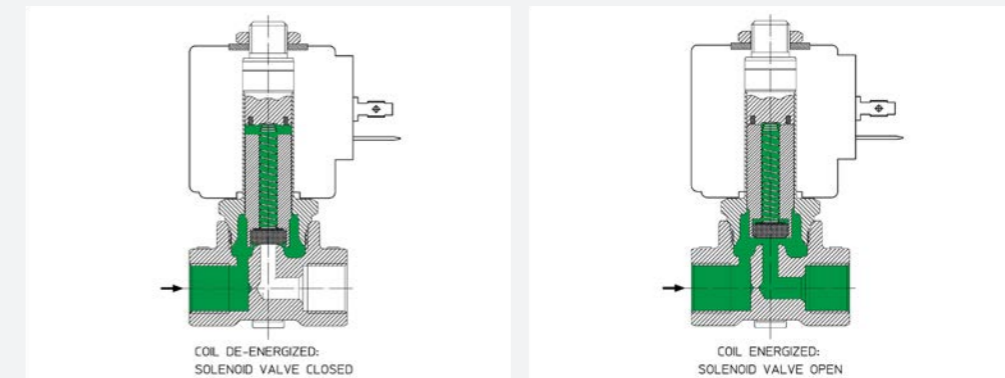
ON-OFF VALVES

2 way normally closed direct acting solenoid valves

Main components: body with main orifice, complete armature tube + complete plunger (normally closed kit), coil.

Functioning: 2 way normally closed direct acting solenoid valves have an inlet pipe and a outlet pipe. The plunger, on which a sealing gasket is mounted, provides directly for opening and closing the main orifice. When the coil is not energized the plunger is in such a position as to close the orifice thus preventing the flow of fluid. When the coil is energized the plunger moves to such a position as to open the orifice, permitting fluid flow.

Notes: In this solenoid valve family an increase in pressure causes an increase in the force required to open the valve: if the pressure difference between inlet and outlet is greater than the maximum value for which the solenoid valve has been designed, the latter may not open even with the coil energized.

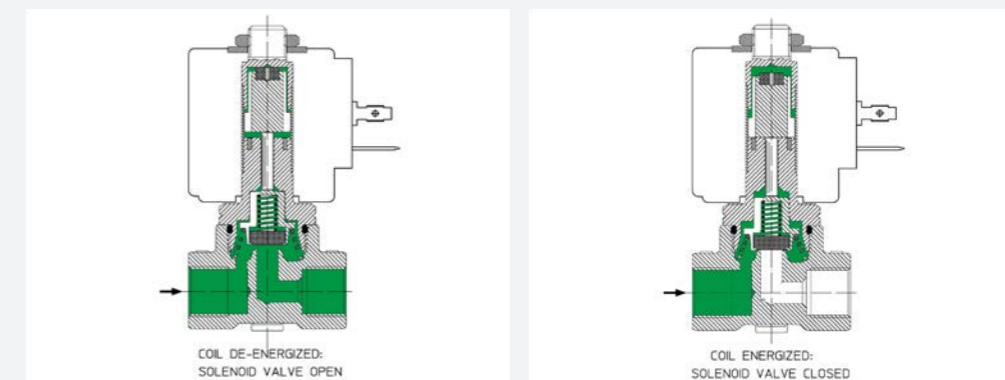


2 way normally open direct acting solenoid valves

Main components: body with main orifice, complete armature tube + plunger + rod + gasket holder assembly (normally open kit), coil.

Functioning: 2 way normally open direct acting solenoid valves have an inlet pipe and a outlet pipe. The plunger, acting on the gasket holder by means of a rod, provides for opening and closing the solenoid valve. When the coil is not energized the orifice is open, permitting fluid flow. When the coil is energized the plunger moves downwards and, by means of the rod, pushes the gasket holder into a position that closes the orifice, preventing fluid flow.

Notes: In this solenoid valve family an increase in pressure causes an increase in the force required to open the valve: if the pressure difference between inlet and outlet is greater than the maximum value for which the valve has been designed, the latter may not reopen even with the coil deactivated.

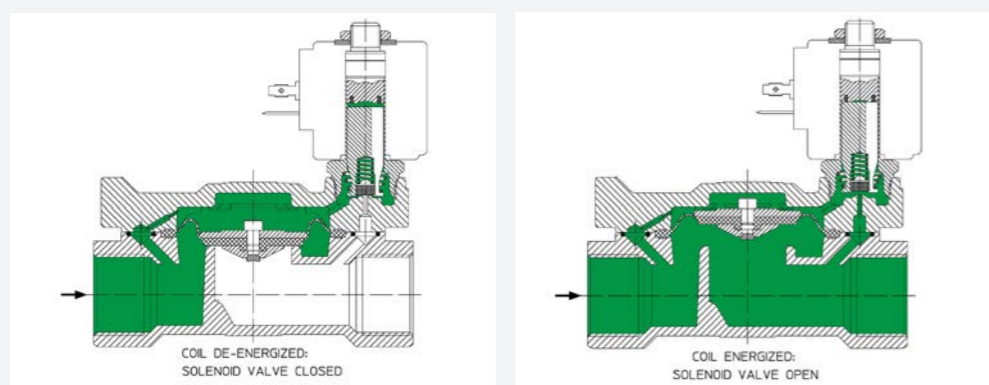


2 way normally closed solenoid valves with pilot control

Main components: body with main orifice, cover, diaphragm (or piston) assembly, complete armature tube, + complete plunger (normally closed kit), coil.

Functioning: 2 way normally closed solenoid valves with pilot control have an inlet pipe and a outlet pipe. The main orifice, in the body, is opened by the effect of an unbalance in pressure between the upper and lower surfaces of a diaphragm (or piston): when the coil is not energized there is fluid under pressure in the chamber above the diaphragm while beneath the diaphragm there is pressure only in the area external to the main orifice: thus the resultant of the forces on the diaphragm is such as to push it and close the main orifice. When the coil is energized, movement of the plunger, on which a gasket is mounted, causes opening of the pilot orifice and discharging of the chamber above the diaphragm: the pressure unbalance moves the diaphragm which opens the main orifice.

Notes: In this family of solenoid valves there must be a minimum pressure difference between the inlet pipe and the outlet one to ensure correct functioning of the solenoid valve. However, an excessive pressure difference between inlet and outlet, as with 2 way normally closed direct acting solenoid valves, causes an increase in the force required to open the pilot orifice, so if this pressure difference is greater than the maximum value for which the solenoid valve has been designed, the latter may not open even when the coil is energized. For a correct operation of the solenoid valve, and to avoid a quick wear of the diaphragm, it is advisable that, once starting the valve closing, the actual flow isn't higher than the Kv (i.e.: flow rate through the valve with a pressure loss of 1 bar). For this reason, should the inlet pressure when the valve is open, be higher than 1 bar, it is not advisable the use of the valve itself with free outlet, i.e. without an outlet restriction bringing the pressure drop to the value of 1 bar. Moreover, particular attention must be paid in designing the hydraulic circuit to the problem of water hammering which could cause overpressures such as to lacerate the diaphragm or damage other parts of the solenoid valve.



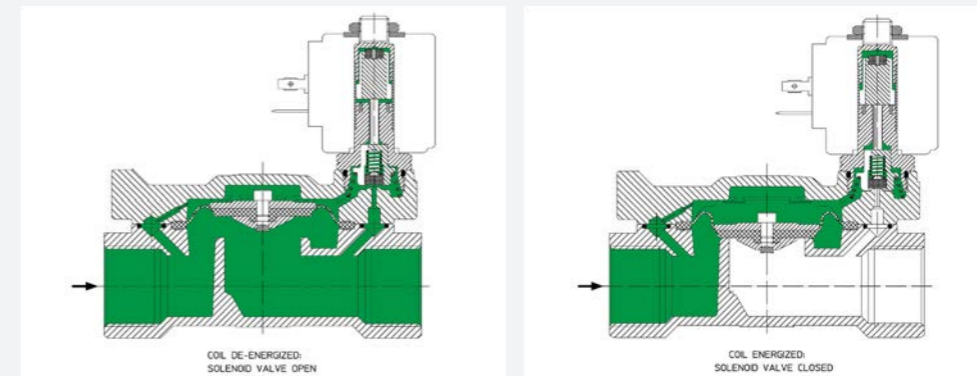
2 way normally open solenoid valves with pilot control

Main components: body with main orifice, cover, diaphragm (or piston) assembly, complete armature tube + plunger + gasket holder + gasket (normally open kit), coil

Functioning: 2 way normally open solenoid valves with pilot control have an inlet pipe and a outlet pipe. Functioning of these solenoid valves is, as regards movement of the diaphragm, identical to that of 2 way normally closed solenoid valves with pilot control except that in place of the normally closed kit a normally open kit is mounted to open and close the pilot orifice. So in this case with the coil energized the pilot orifice is closed and the diaphragm therefore in such a position as to close the main orifice, whereas with the coil not energized the pilot orifice is open, thus causing the main orifice to open.

Notes: In this family of solenoid valves there must be a minimum pressure difference between the inlet and outlet pipes to ensure correct functioning of the solenoid valve. However, an excessive pressure difference between inlet and outlet, as with 2 way normally open direct acting solenoid valves, causes an increase in the force required to open the pilot orifice, so if this pressure difference is greater than the maximum value for which the solenoid valve has been designed, the latter may not reopen even when the coil is not energized. For a correct operation of the solenoid valve, and to avoid a quick wear of the diaphragm, it is advisable that,

once starting the valve closing, the actual flow isn't higher than the Kv (i.e.: flow rate through the valve with a pressure loss of 1 bar). For this reason, should the inlet pressure when the valve is open, be higher than 1 bar, it is not advisable the use of the valve itself with free outlet, i.e. without an outlet restriction bringing the pressure drop to the value of 1 bar. Moreover, particular attention must be paid in designing the hydraulic circuit to the problem of water hammering which could cause overpressures such as to lacerate the diaphragm or damage other parts of the solenoid valve.

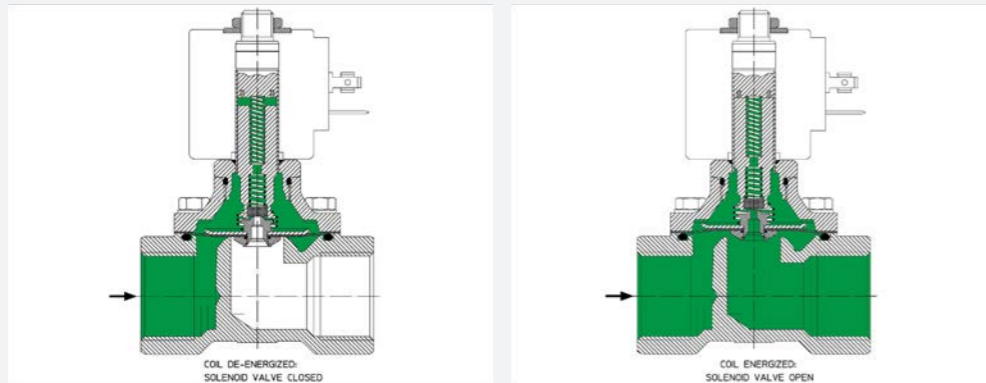


2 way normally closed combined operation solenoid valves

Main components: body with main orifice, cover, diaphragm (or piston) assembly, complete armature tube + complete plunger, coil.

Functioning: 2 way normally closed combined operation solenoid valves have an inlet pipe and a outlet pipe. Opening of the main orifice, which is in the body, comes about by an unbalance in pressure between the upper and lower surfaces of a diaphragm (or piston) together with direct action of the plunger which is fixed to the diaphragm. Functioning is substantially similar to that of solenoid valves with pilot control as regards diaphragm movement except that even with small pressure differences between inlet and outlet, functioning is ensured by the direct action of the plunger on the diaphragm. So, also in this case, when the coil is not energized there is fluid under pressure in the chamber above the diaphragm while beneath the diaphragm there is pressure only in the area external to the main orifice: therefore the resultant of the forces on the diaphragm is such as to push it to close the main orifice. When the coil is energized, movement of the plunger, on which a gasket is mounted, opens an orifice on the complete diaphragm (pilot orifice) and discharges the chamber above the diaphragm. At the same time the plunger exercises direct force on the diaphragm, aiding its opening. The sum of this force and the unbalance of pressures on the two sides of the diaphragm causes the diaphragm to move and open the main orifice.

Notes: In this family of solenoid valves there must not be a minimum pressure difference between the inlet and outlet pipes to ensure correct functioning of the solenoid valve. However, an excessive pressure difference between inlet and outlet, as with 2 way normally closed direct acting solenoid valves, causes an increase in the force required to open the pilot orifice, so if this pressure difference is greater than the maximum value for which the solenoid valve has been designed, the latter may not open even when the coil is energized. For a correct operation of the solenoid valve, and to avoid a quick wear of the diaphragm, it is advisable that, once starting the valve closing, the actual flow isn't higher than the Kv (i.e.: flow rate through the valve with a pressure loss of 1 bar). For this reason, should the inlet pressure when the valve is open, be higher than 1 bar, it is not advisable the use of the valve itself with free outlet, i.e. without an outlet restriction bringing the pressure drop to the value of 1 bar. Moreover, particular attention must be paid in designing the hydraulic circuit to the problem of water hammering which could cause overpressures such as to lacerate the diaphragm or damage other parts of the solenoid valve.

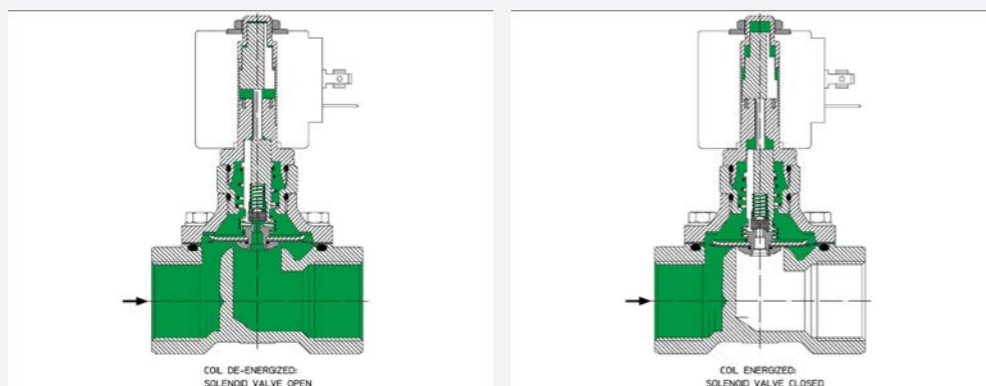


2 way normally open combined operation solenoid valves

Main components: body with main orifice, cover, diaphragm (or piston) assembly, complete armature tube + complete plunger, coil.

Functioning: 2 way normally open combined operation solenoid valves have an inlet pipe and a outlet pipe. 2 way normally open functioning is substantially similar to that of solenoid valves mixed actuated normally closed. The difference is basically in the piloting kit. Instead of a normally closed solenoid operator, it is mounted a normally open kit. In this case when the coil is powered the piloting orifice will be closed and the main seat will keep close the valve. The opposite happen when the coil is not powered and the main seat remains open allowing the fluid flow.

Notes: In this family of solenoid valves there must not be a minimum pressure difference between the inlet and outlet pipes to ensure correct functioning of the solenoid valve. However, an excessive pressure difference between inlet and outlet, as with 2 way normally closed direct acting solenoid valves, causes an increase in the force required to open the pilot orifice, so if this pressure difference is greater than the maximum value for which the solenoid valve has been designed, the latter may not open even when the coil is energized. For a correct operation of the solenoid valve, and to avoid a quick wear of the diaphragm, it is advisable that, once starting the valve closing, the actual flow isn't higher than the Kv (i.e.: flow rate through the valve with a pressure loss of 1 bar). For this reason, should the inlet pressure when the valve is open, be higher than 1 bar, it is not advisable the use of the valve itself with free outlet, i.e. without an outlet restriction bringing the pressure drop to the value of 1 bar. Moreover, particular attention must be paid in designing the hydraulic circuit to the problem of water hammering which could cause overpressures such as to lacerate the diaphragm or damage other parts of the solenoid valve.



3 way normally closed direct acting solenoid valves

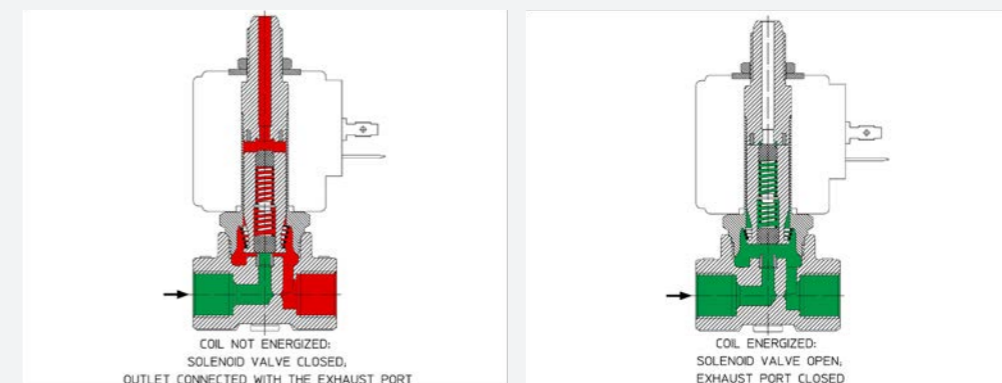
Main components: body with orifice, complete armature tube + fixed core + plunger + 2 gaskets (3 way kit), coil.

Functioning: 3 way normally closed solenoid valves have an inlet pipe, a outlet pipe

and an exhaust pipe. The plunger, on which two gaskets are mounted, provides directly for opening and closing the solenoid valve's main orifice with one of the two gaskets and, simultaneously, opening or closing the outlet orifice with the other gasket. When the coil is not energized the plunger is in such a position as to close the main orifice, preventing the flow of fluid from the inlet pipe to the outlet pipe, whereas the outlet pipe is in communication with the exhaust pipe.

When the coil is energized the plunger moves to a position in which it opens the main orifice and closes the exhaust orifice, permitting fluid to flow from the inlet pipe to the outlet one and preventing flow to the exhaust.

Notes: On these valves, unlike the other models, the fluid shall enter into the valve so to pass through the main orifice from the lower side towards the higher one. In this family of solenoid valves an increase in pressure causes a reduction in the force required to open the valve: if the pressure difference between inlet and outlet is greater than the maximum value for which the solenoid valve has been designed, the latter may open even when the coil is not energized.

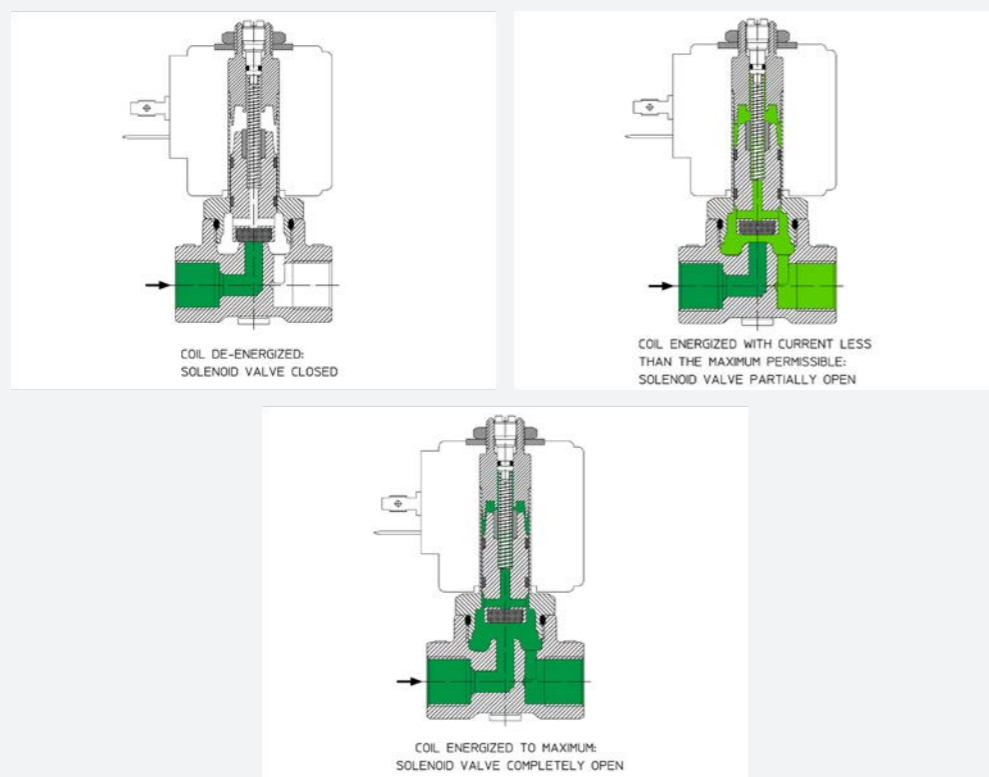


Proportional direct acting solenoid valves

Main components: body with main orifice, complete armature tube + adjustment screws + plunger + gasket, coil.

Functioning: Proportional direct acting solenoid valves have an inlet pipe and a outlet pipe. The plunger, on which a sealing gasket is mounted, provides directly for opening and closing the main orifice of the solenoid valve. Unlike 2 way normally closed solenoid valves which have only two states, open and closed, a proportional solenoid valve, in function of the current run in the coil, can open partially. The solenoid valve can be set with the adjustment screws in such a way that, with the coil not energized, a perfect seal at maximum project pressure is guaranteed. For clarification regarding methods used for energising and controlling this type of solenoid valve, see the functioning scheme for these valves in this section. It is important to note that proportional solenoid valves are always operated by Direct Current (DC).

Notes: On these valves, unlike the other models, the fluid shall enter into the valve so to pass through the main orifice from the lower side towards the higher one. In this family of solenoid valves an increase in pressure, as with three way solenoid valves, causes a reduction in the pressure required to open the valve: if the pressure difference between inlet and outlet is greater than the maximum value for which the solenoid valve has been tared, the latter may open even when the coil is not energized. Proportional solenoid valves are tared individually, at the moment of installation and inspection testing, with the adjustment screws in the fixed core: any modification of this taring may make the valve work in a different way with regard to the data shown on the label.



General Description

ODE PROPORTIONAL SOLENOID VALVES allow the fluid flow rate passing through them to be controlled by varying the current into the coil. This is the main difference between this type of solenoid valve and the traditional type with which the flow rate of the fluid is determined exclusively by the difference between the pressure upstream and downstream of the same solenoid valve (ΔP). If, with the same ΔP , it is necessary to have different flow rates, proportional solenoid valves are suitable to solve the problem. From the practical point of view, although a DIRECT CURRENT COIL is scheduled for running, a proportional valve needs a particular power supply that allows to control the current into the coil by varying a parameter known as Duty-Cycle, which is directly connected to it. (see paragraph "Notes about the control electronics")

Technical Description

As mentioned above, with this type of solenoid valve, the flow rate is determined by the current into the coil and by ΔP . Therefore, it is possible to draw rate-of-flow curves where one of these parameters is kept constant while the other is the independent variable. For example, it is possible to trace different graphs with ΔP taken as the parameter (e.g. 1 bar, 2 bar, 3 bar, etc.) in which the flow rate is a function of the current that flows into the coil (which is directly connected to the duty cycle: see paragraph "Notes about the control electronics")

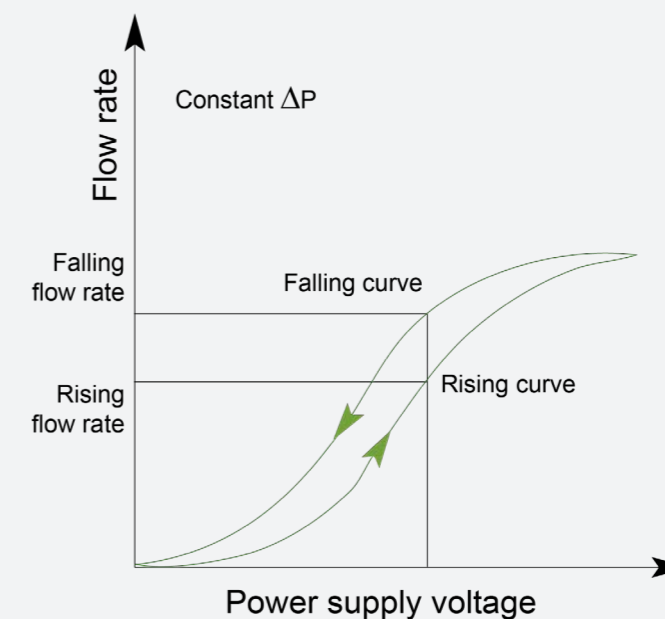
It is important to note that by varying the DP with the same current through the coil, there will be different flow rates.

Therefore, it will be better if DP has a constant value if a flow rate linked directly to the current that flows into the coil only is required. Otherwise, the flow rate will be affected. It is also important to note that more ΔP increases, the less the current through the coil will have to be for since the pressure allows the opening of the valve itself.

Hysteresis

To explain this phenomenon it is worth describing how the laboratory test which

lets us draw the flow rate-Duty Cycle graphs with constant pressure is carried out. ΔP is taken to a value which must remain constant, then the valve is powered with a Duty Cycle which increases step by step and the flow rate relating to certain Duty Cycle values is noted (e.g. 50%, 60%, 70%, etc.). Once reached the 100%, the Duty Cycle is reduced and the flow rate for the same Duty Cycle values is measured: in general the latter rate-of-flow values will be slightly greater than those noted previously for the same Duty Cycle value. This phenomenon takes the name of flow rate hysteresis and it will be necessary to take it into account when using the solenoid valve.



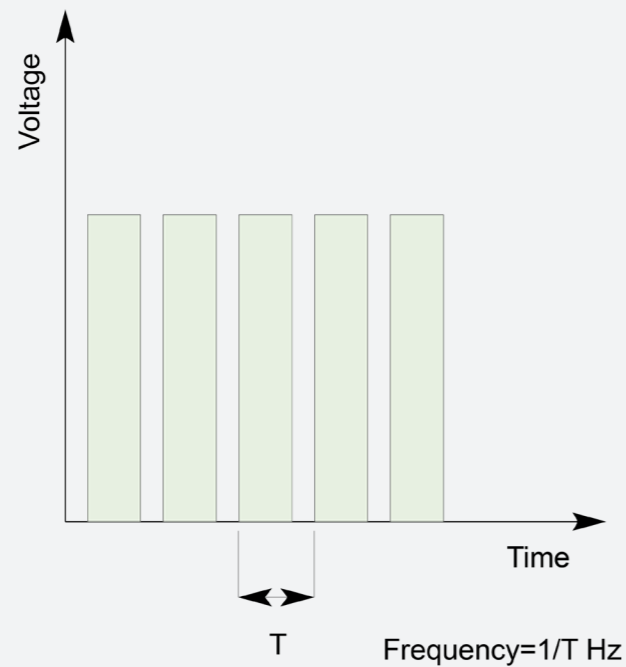
Other parameters

Other parameters in the catalogue are:

- repeatability which indicates the maximum error committed by repeating the test with identical procedures (ΔP , rising or falling stage, etc.).
- sensitivity which indicates the minimum increase to be given to the voltage to obtain a variation in flow rate (with constant ΔP).

Notes about the electronic control

We mentioned before that DIRECT CURRENT COILS are used on this kind of valves. As a matter of fact, it is a RECTANGULAR PULSE tension which should arrive to coil poles as shown in the diagram. Our electronic circuit energises the coil by this kind of power supply, allowing the control of Duty Cycle by means of a control signal from 0 to 10 volt. Duty Cycle is directly related to the current flowing through the coil, so that a change of Duty Cycle causes a change of current through the coil: the higher the Duty Cycle is, the higher will be the power absorption by the coil, and the higher valve opening. If the solenoid valve is to be powered with electronics other than ODE, it is advisable to supply the coil with rectangular pulses with a frequency between 600 Hz and 800 Hz. With slightly different frequencies, lower performance in terms of hysteresis, repeatability and sensitivity can be obtained. To obtain the proportional effect it is possible to vary the voltage supply at the coil poles: this method is not recommended as it will bring to an increase of the flow rate hysteresis.



ISO 1219 symbols

In fluid power systems, power is transmitted and controlled through a fluid (liquid or gas) under pressure within a circuit. Graphical symbols are intended to describe fluid power components and their function. They are used in circuit diagrams, on nameplates, in catalogues and in other commercial literature.

ISO 1219 establishes basic elements for symbols. It specifies rules for devising fluid power symbols for use on components and in circuit diagrams. ISO 1219 is a collective application standard of the ISO 14617 series. The symbols are designed in fixed dimensions to be used directly in data processing systems, which might result in different variants.

Ports/positions:

The function of a valve (2/2, 3/2, 4/2 etc.) is indicated by two digit:

- the first shows the number of ports
- the second shows the number of positions

(NB: pilot ports do not count)

- 2/2 = 2 ports - 2 positions
- 3/2 = 3 ports - 2 positions
- 5/2 = 5 ports - 2 positions

2 positions



3 positions



Function:

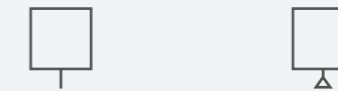
- NC = normally closed (rest position)
- NO = normally open (rest position)
- U = universal (pressure supply to any of the ports)

Direction of flow:

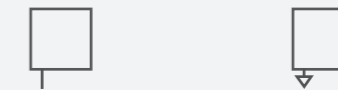
The arrow in the square shows the direction of flow. The piping is shown connected to the square representing the valve in its non-actuated position.

Connection of supply and exhaust ports:

- Connected to pressure supply



- Exhaust which can be piped

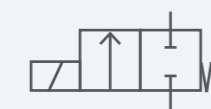


- Exhaust which cannot be piped



Pilot and return:

The method of actuation is indicated by symbols added to the squares. The pilot control is generally shown on the left side and the return control on the right side.



OTHER ENGINEERING INFORMATION

Basic design information

The operating parameters that define a solenoid valves are working pressure, flowrate, pressure drop, temperature and maximum pressure.

The operating pressure parameters can be described as follows:

MAXIMUM OPERATING PRESSURE DIFFERENTIAL (MOPD)

The MOPD is the maximum pressure drop across the valve when the valve is closed. When the valve is closed, the supply pressure is just present at the inlet port. This is the pressure the valve has to open against, i.e. this is the pressure the valve has to overcome to allow flow. If there is a pressure at the outlet port when the valve has to open, this can help the valve in the operation so it will be subtracted from the inlet pressure to get to the MOPD value. In conservative designs the supply pressure is considered equal to the MOPD.

Example: in the case of water flowing out of the valve into a tank or the case of air discharge into the atmosphere, P2 is practically zero and the pressure drop or pressure differential would be $P = P1 - P2 = P1$. If P2 was > 0 bar, for example due to a nozzle, the P would be reduced to $P1 - P2$ value.

When selecting a valve, the calculated MOPD value given in the catalogue must be equal to or greater than the maximum calculated pressure at the supply port. Please note that AC valves usually have higher MOPDs than DC valves.

MINIMUM OPERATING PRESSURE DIFFERENTIAL (mOPD)

When a valve has a minimum operating pressure differential equal to 0, the valve will remain open even if the pressures at the inlet and outlet are the same. If such value is > 0 , make sure that the minimum pressure drop in the application is always above the catalog value otherwise the valve will generate inconsistent flow.

MAX. ALLOWABLE PRESSURE (PS, According to EN 764)

The maximum allowable pressure is the maximum pressure for which the equipment is designed. Pressures above PS may damage the internal parts of the valve. PS is also the maximum possible value for inlet pressure P1.

Other parameters

Maximum ambient temperature (Tu)

The maximum ambient temperature is determined to keep safe limits for coil insulation.

NOTE: max. ambient temperature marked on the coil (or on the label attached onto) is defined by applicable standard, rules and/or directive based on the application. Refer to ODE tech. dept. for further information.

Minimum ambient temperature

The minimum ambient temperature depends on coil materials and applicable standards. It is important to note that damage may occur when liquids solidify above the specified minimum temperature.

Maximum fluid temperature (Ts)

The maximum fluid temperature listed is valid for an ambient temperature of 20°C and 100% ED (Duty Cycle).

VISCOSITY

The viscosity of a fluid is a measure of a fluids resistance to flow. Viscosity affects the flow rate of a valve considerably: the flow rate and the MOPD are reduced when viscous fluids are used. There are two types of viscosity:

- dynamic viscosity (μ), expressed in Pascal*second (Pa*s) or poise (P)
- kinematic viscosity (ν), expressed in m²/s

The following units are generally used in daily practice for kinematic viscosity:

- Centistokes (cSt). 1 cSt = 1 mm²/s = 1/100 St
- °Engler (°E)

Dynamic viscosity and kinematic viscosity are connected by the following equation.

$\nu = \mu/\rho$

where:

ν = kinematic viscosity [cSt]

μ = dynamic viscosity [cP]

ρ = density [kg/dm³]

Density, and therefore viscosity, are greatly dependent on temperature.

The table below gives the maximum recommended kinematic viscosity for different seat diameters. For indirect operated valves the maximum viscosity is limited by the diameter of the pilot orifice:

Valve Type	Seat Diameter [mm]	Max. Kinematic Viscosity [cSt]
Direct operated	1.0 to 1.5	12
	2.0 to 2.3	37
	2.5 to 8.0	53
Indirect operated	All	12
Combined acting	All	12

Using fluids with higher viscosity values could lead to clogging and to a reduction of the performances (MOPD) of the valves.

VALVE TIGHTNESS

Valve tightness or leakage depends on sealing materials, body material and medium. The leakage of ODE valves is generally limited to the values stated below. Please contact ODE for further information.

Ways	Valve Type	Body Material	Sealing	Test pressure	Internal leakage (i.e. through the orifice)	External leakage
2-way	Direct	Brass/StSt	Elastomer	10 bar	4 cm ³ /h	4 cm ³ /h
2-way	Direct	Brass/StSt	PTFE/RUBY	10 bar	300 cm ³ /h	4 cm ³ /h
2-way	Direct	Technopolymer	Elastomer	10 bar	10 cm ³ /h	10 cm ³ /h
3-way	Direct	Brass/StSt	Elastomer	MOPD	4 cm ³ /h	4 cm ³ /h
3-way	Direct	Brass/StSt	PTFE/RUBY	MOPD	300 cm ³ /h	4 cm ³ /h
3-way	Direct	Technopolymer	Elastomer	MOPD	10 cm ³ /h	10 cm ³ /h
2-way	Indirect	Brass/StSt	Elastomer	10 bar	5 cm ³ /h	5 cm ³ /h
				Pmin catalog	20 cm ³ /h	-
2-way	Indirect	Brass/StSt	PTFE	10 bar	300 cm ³ /h	5 cm ³ /h
				Pmin catalog	300 cm ³ /h	-
2-way	Combined	Brass / StSt	Elastomer	10 bar	5 cm ³ /h	5 cm ³ /h
				5 mbar	5 cm ³ /h	-

Flow rate and Kv factor

Define the proper size of a valve is very important as there are undesirable effects in both undersizing and oversizing. Undersizing may lead to high pressure losses in the system and that required flow conditions will not be met. Oversizing may lead to unnecessarily high cost of the system and variable or erratic flow through the valve.

Definition of Kv

The flow coefficient Kv in cubic metres per hour or litres per minute is the volumetric flow rate through a valve in the fully open position and at the following conditions:

- the pressure differential across the valve is 100 kPa (1 bar)
- the fluid is water within a temperature range of 5°C to 40°C

The Kv value is obtained from test results and, with the help of the following engineered formulae, can be used to calculate the flow in other conditions:

		$Q - Q_n$	K_v	ΔP
Liquids		$Q = K_v \sqrt{\frac{\Delta P}{SG}}$	$K_v = Q \sqrt{\frac{SG}{\Delta P}}$	$\Delta P = SG \left(\frac{Q}{K_v}\right)^2$
Gases	$P_2 \geq P_1/2$	$Q_n = 514 \cdot K_v \sqrt{\frac{\Delta P \cdot P_2}{SG_n \cdot T_1}}$	$K_v = \frac{Q_n}{514} \cdot \sqrt{\frac{SG_n \cdot T_1}{\Delta P \cdot P_2}}$	-
	$P_2 < P_1/2$	$Q_n = 257 \cdot K_v \sqrt{\frac{P_1}{SG_n \cdot T_1}}$	$K_v = \frac{Q_n}{257 \cdot P_1} \cdot \sqrt{SG_n \cdot T_1}$	$\Delta P = P_1/2$

Where:

Q = volumetric flow rate in m³/h or l/min

Q_n = normal volumetric flow rate in Nm³/h or NI/min at 20°C and 760 mmHg

P₁ = inlet pressure in bar(a)

P₂ = outlet pressure in bar(a)

ΔP = pressure drop across the valve, where ΔP= P₁-P₂

T₁ = inlet temperature in K

SG = Specific Gravity (or relative density) of the fluid with respect to water

SG_n = Specific Gravity (or relative density) of the fluid with respect to air at normal conditions

Notes:

- If the valve is discharging to atmosphere, the pressure drop is equal to the inlet pressure with liquids. However, when the fluid is a gas or steam, the maximum pressure drop usable for flow rate calculation is equal to 50% of inlet pressure; this is called critical pressure drop and, in this situation, the flow is choked as it reached the speed of sound. Any further pressure drop will not increase flow rate. In all the other cases, the pressure drop is the difference between inlet and outlet pressures.
- In most systems it is desirable to keep the pressure drop to a minimum. If Δp is not specified and this information is needed to size the valve, a rule of thumb for ON-OFF valves is to take 10-15% of the inlet pressure or 1 bar as pressure drop. If the drop is less than minimum pressure differential, the valve is oversized. In these situations, a valve with a lower minimum operating pressure differential should be selected.

Maintenance - Tightening torques

Maintenance of a solenoid valve involves replacing worn components and ensuring that parts are clean and free of debris. Proper maintenance and care of a solenoid valve can extend product life and ensure predictable operation.

Replacement part kits for solenoid valves can be purchased from the ODE.

In performing maintenance operations, please take note of the following recommended tightening torques of the different components.

Armature tubes' tightening torques:

Armature tube Ø	Body material	Body-armature tube sealing type	Torque Wrench (Nm)
10 mm	metal	O-R	10 ± 0,5
	plastic	O-R	4 ± 0,4
13 mm	metal	O-R	20 ± 0,5
	plastic	O-R	4 ± 0,4
	metal	O-R + metal	30 ± 0,5

Other torques:

- Tightening torque for coil retaining nut: $2 \pm 0,4$ Nm
- Tightening torque for anti-humidity kit (plastic and aluminum): $2 \pm 10\%$ Nm

MATERIALS

METALS

Aluminum

Machined aluminum is used for manifold systems of valves. Die cast aluminum is used for enclosure of ATEX valves, 'd' protection type.

Copper

Primarily used for phase displacement ring (shading coil). Gold plated copper is used in food applications.

Brass

Forging brass is used as standard materials for ODE valves' bodies. Low lead content brass is available for food applications.

Stainless steel AISI 303

One of the most widely used stainless steels containing 17-19% chromium and 8-10% nickel. Used for valve bodies, springs and internal parts.

Stainless steel AISI 304

One of the most widely used stainless steels containing 18-20% chromium and 8-11% nickel. Used for valve bodies, springs and internal parts.

Stainless steel AISI 316 or AISI 316L

Alloy containing 16-18% chromium, 11-14% nickel and 2-3% molybdenum. Highly corrosion resistant. Low carbon version "L" is particularly suitable for welding and carbon content drops from ca. 0,08% to ca. 0,03%.

Stainless steel AISI series 400

Stainless steel used of magnetic parts of the valve, such as plunger and fixed core.

RUBBERS

NBR (Nitrile Butadiene Rubber)

NBR is commonly referred to as a nitrile rubber and is a standard synthetic elastomer with great elastic and mechanical resistance performances. It is the standard compound for service in air, water and petroleum oils applications. It is not recommended for chlorine, ozone, highly aromatic gasolines or acids. It has a temperature range of -10°C to +90°C.

FKM (fluorocarbon)

Family of fluoroelastomer materials defined by the ASTM International standard D1418. It is equivalent to FPM by ISO/DIN 1629 standard. Increased general chemical compatibility, but less abrasion and tear resistance than NBR. FKM was primarily developed for handling hydrocarbons such as fuels, gasolines, solvent, etc., which are not compatible with NBR. FKM has limited compatibility with ammonia, ethanol, hydrogen sulphide and freons. Special compounds are suitable for food contact applications.

All ODE valves used in industrial oxygen service have FKM sealing.

It has a temperature range of -10°C to +140°C and it is not suitable for low temperature applications.

EPDM (ethylene-propylene)

Ethylene-propylene is selected for applications which have a wider temperature range than the NBR temperature range, such as handling hot water and steam. Ethylenepropylene has an extremely wide range of fluid compatibility: it has good resistance to ozone and weather, it is also compatible ammonia, ethanol, CO₂ and water. EPDM has the disadvantage that it cannot be used with hydrocarbons, halogenated solvent (such as chlorine) or other fluids so contaminated, such as lubricated air. It is also incompatible with chlorine water. It has a temperature range of -10°C to +140°C.

CR (chloroprene)

Principally used in refrigeration and lubrication systems as an external seal. Temperature range of -30°C to +90°C.

VMQ (silicone)

VMQ is the only elastomer which can be utilized for both high and low temperature. It can also handle hydrogen peroxide and some acids. Not good for steam; poor disc life. A food grade compound of VMQ is also available.

HNBR (Hydrogenated Nitrile Butadiene Rubber)

It has high physical strength and is able to maintain its properties after long-term exposure to heat, oil and chemicals. It has improved chemical resistance and wider temperature range than NBR and it is widely adopted in high demanding

applications, i.e. industrial sealing for oil field exploration and processing. HNBR is compatible with some freons, air, fuel and fuel gases and mineral Oils. It is not compatible with benzene, chlorine water and ethanol. Temperature range is -30°C to 130°C.

Notes:

PTFE and RUBY are also used as sealing materials in ODE valves, but they are not elastomeric. Information related to PTFE and RUBY can be found in the next pages.

PLASTICS

PA (polyamide)

Polyamides are crystalline polymers typically produced by the condensation of a diacid and a diamine. These resins are known to be very durable and resistant to many chemicals. Heat resistant types are available. PA is hygroscopic.

PPS (polyphenylene sulfide)

Polyphenylene sulfide is an engineering plastic, commonly used in ODE valves for food contact applications. PPS can be molded, extruded, or machined to tight tolerances. This resin has remarkable chemical resistance and no known solvents below 200°C. It has low friction, good wear resistance and high tensile strength.

POM (polyacetal or polyoxymethylene)

Polyoxymethylene (POM), also known as acetal, is an engineering thermoplastic used in precision parts requiring high stiffness, low friction, and excellent dimensional stability. Acetal resin types are odorless, tasteless, non-toxic and resistant to most solvents.

PSU (polysulfone)

Polysulfones are a family of high performance thermoplastics. They exhibit toughness and stability at high temperatures. Polysulfones are used in specialty applications and often are a superior replacement for polycarbonates. PSU applications include valve bodies for analytical and medical and food contact applications.

PTFE (polytetrafluoroethylene)

Polytetrafluoroethylene (PTFE) is a synthetic fluoropolymer of tetrafluoroethylene. PTFE's mechanical properties are low compared to other plastics, but it is still more resistant than any other elastomer, this is the reason why PTFE is commonly used as seat material on ODE high-pressure valve. PTFE is also used as sealing material in all the applications where rubber sealing are not suitable due to chemical compatibility.

Valves with PTFE sealing may have higher leakage values that correspondent valves with resilient or "soft" sealing materials.

Filled PTFE

PTFE reinforced is a form of PTFE having fillers which have been added to improve mechanical properties.

PVC (polyvinyl chloride)

Polyvinyl chloride (PVC) is one of the most widely produced synthetic plastic polymer. PVC has high hardness and good mechanical properties. PVC is chemically resistant to acids, salts, bases, fats, and alcohols, making it resistant to the corrosive effects of sewage. It is also resistant to some solvents. PVC is commonly used as piping material for plumbing. Some specific compounds also as tubing material for single use, medical applications due to transparency, light weight, softness, tear strength, kink resistance, suitability for sterilization and biocompatibility.

OTHERS

RUBY

Ruby is synthetic stone with high hardness that is inert to almost every chemical. It features outstanding mechanical, corrosion and wear resistance. It is commonly used as main seat materials for solenoid valves used in coffee machines, but it is also usable with hydrocarbons, such as gasoline and diesel, and refrigerant fluids. Due to its hardness, valves with RUBY sealing may have higher leakage values than correspondent valves with resilient or "soft" sealing materials.

CERTIFICATIONS and MARKING

CE

The CE marking is a manufacturer's declaration that the product sold meets certain standards for health, safety, and environmental protection and that it can be sold in the European Economic Area (EEA).

Not all products need CE marking to be traded in the EEA; only product categories subject to relevant directives or regulations are required (and allowed) to bear CE marking.

The main EU directives that require CE marking, that are or can be relevant to ODE products, are the following ones:

- Low Voltage Directive (LVD)
- Electromagnetic Compatibility Directive (EMC)
- Pressure Equipment Directive (PED)
- Restriction of Hazardous Substances Directive (RoHS)
- REACH - Regulation (EC)
- Waste Electrical and Electronic Equipment Directive (WEEE)
- ATEX Directive
- Gas Appliances Regulation (GAR)

In order to assume that the product complies with one or more Directives, there are standards used to determine the suitability of a certain method of verification. These standards are called "harmonized" when their references are published in the Official Journal of the European Communities (GUCE) in relation to a directive. The harmonized technical standards are developed by European Standardization Bodies: CENELEC for the products of the electrical/electronic compartment, IEC for products in telecommunications, CEN for the products of other sectors. For each directive there are several standards that are applicable. The use of these standards remains voluntary. Manufacturers, other economic operators, or conformity assessment bodies are free to choose another technical solution to demonstrate compliance with the mandatory legal requirements.

All ODE products are accompanied with a declaration of conformity that can be downloaded from our website.

ATEX

ATEX derives its name from "Appareils destinés à être utilisés en ATmosphères EXplosives", which is the French for Equipment intended for use in EXplosive ATmospheres.

ATEX is the conventional name that groups two EU directives describing the minimum safety requirements of the workplace and equipment used in explosive atmosphere, one for the manufacturer and one for the user of the equipment.

ATEX "equipment" shall have a specific marking that is explained in the table below.

	Tab. 1	Tab. 2	Tab. 3	Tab. 1
	II 2G	Ex d	IIC T6	Gb
	II 2D	Ex tb	IIC T80°C	Db

Tab. 1

Flammable medium	Hazardous location Probability of a potentially explosive atmosphere to occur	Classification of hazardous location	Product Classification		Equipment protection level (EPL)
			Product Group	Product category	
Gases, mists, vapours	Continuously, for long periods or frequently	Zone 0	II		
	Likely to occur	Zone 1	II	1G	Ga Gb Gc
	Infrequently and for short periods only	Zone 2	II		2G 3G
Dusts	Continuously, for long periods or frequently	Zone 20	II		
	Likely to occur	Zone 21	II	1D	Da Db Dc
	Infrequently and for short periods only	Zone 22	II		2D 3D

Tab. 2

Protection principle Code	Type of protection	Code	Symbol	To use in zone	CENELEC reference	
Prevents transmission of the explosion outside	flameproof enclosure	Ex d	da		0,1,2	EN 60079-1
			db		1,2	
			dc		2	
Positive pressure device	pressurised apparatus	Ex p	px		1,2,21,22	EN 60079-2
			py		1,2,21,22	
			pz		2,22	
Prevents transmission of explosion outside	powder filling	Ex q	qb		1,2	EN 60079-5
Parts immersed in oil to isolate from explosive atmosphere	oil immersion	Ex o	ob		1,2	EN 60079-6
			oc		2	
Prevents high temperatures and sparks	increased safety	Ex e	eb		1,2	EN 60079-7
			ec		2	
Low current/voltage supply	intrinsic safety	Ex i	ia		0,1,2,20,21,22	EN 60079-11
			ib		1,2,21,22	
			ic		2,22	
As above, but for use in zone 2	protection "n"	Ex n	nA		2	EN 60079-15
			nC		2	
			nR		2	
Encapsulated	moulding	Ex m	ma		0,1,2,20,21,22	EN 60079-18
			mb		1,2,21,22	
			mc		2,22	
Dust explosion proof	protection by enclosure	Ex t	ta		20,21,22	EN 60079-31
			tb		21,22	
			tc		22	

Tab. 3

-	Explosion group			Examples			
GASES	IIA	IIB	IIC	Ammonia	Ethanol	Petrol	Acetaldehyde
				Methane	Cyclohexene	Diesel fuel	
	Ethane	n-Butane	Fuel oil				
				Propane		n-Hexane	
				City gas	Ethylene	Ethyl glycol	Ethyl ether
				Acrylic nitrile	Ethylene oxide	Carbon hydrogen	
				Hydrogen	Acetylene		Carbon disulphide
T° CLASS	T1 < 450°C						
	T2 < 300°C						
	T3 < 200°C						
	T4 < 135°C						
	T5 < 100°C						
	T6 < 85°C						
DUSTS	IIIA	IIIB	IIIC	Flammable fibers			
				non conductive dusts			
	conductive dusts						

Product use depending on temperature class (T1 -T6). The temperature class indicates the max. temperature of the exposed surface of the product. For dust explosion proof, the max. surface temperature is directly shown (e.g. T80°C).

In addition to the datasheets, ATEX product are accompanied by the following documentation:

- Labels / Markings (on each product)
- Certificates (available on ODE website <https://www.ode.it/en/company/certifications/>)
- Declaration of Conformity (included in the shipment)
- Instruction sheets (included in the shipment and available on ODE website <https://www.ode.it/en/download/instruction-sheets/>)

FAQs

What equipment has to comply with ATEX for use in hazardous areas?

The ATEX Directive applies to electrical and non-electrical equipment. For a solenoid valve, the complete product must be ATEX-certified. ATEX certification is also necessary for non-electrical equipment, such as regulators and valves, if used in a certified zone. ATEX certification is not necessary for non-electrical equipment that does not have its own potential ignition source, such as filters, lubricators, etc. These product categories are named simple mechanical products and can be used in specific ATEX zones 1- 21 and 2-22 in compliance with the manufacturer's instructions.

Can I assemble ATEX-certified products?

Yes, as soon as each product that is part of the assembly is ATEX-certified, i.e. pneumatic ATEX angle seat valve and ATEX solenoid pilot valve. The lowest category and temperature class determines the category of the assembly and it has to be compatible with the area of use. Check the continuity of the earth connection to allow dissipation of static electricity. Continuity must be ensured on all equipment requiring assembly, regardless of area of use.

Is traceability of ATEX products mandatory?

Yes, traceability of ATEX products is mandatory from their construction to their use.

Can I repair ATEX equipment?

ODE permits only the replacement of coils on ATEX products. You can buy spare coils and carry out maintenance subject to some conditions:

- You must ensure traceability of the repaired ATEX product
- The technician performing the repair must have received sufficient training concerning the ATEX directive
- The conformity of the markings must be checked

Is ATEX the only certification for explosive atmospheres?

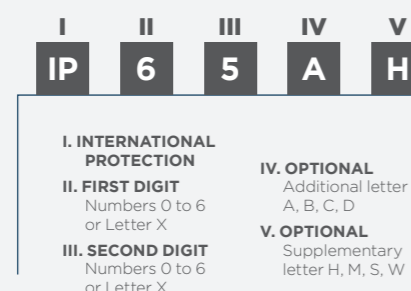
No, there is a multitude of certification schemes all around the world: FM (Factory Mutual) and UL provide standards, testing and certification in the United States. CSA does the same for Canada. UL, FM, and CSA have implemented programs allowing certifications to be valid in both countries. IEC (International Electrotechnical Commission) provides standards that are recognized on international level.

	IECEX	ATEX
Jurisdiction	Global	EU
Certification scheme compliance	Compliance with the Directive, EHSRs (Essential Health and Safety Requirements), and EN standards	Compliance with International Electrotechnical Commission (IEC)
Certification bodies	Known as an ExNB (Ex Notified Body). They are third parties.	ExCBs (Ex Certification Bodies) and ExTLs (Ex Testing Laboratories) are evaluated and qualified according to a single international process
Certificate name	EC Type Examination Certificate	Certificate of Conformity (CoC)
Classification of areas	Zone based	
Assessment and testing process	Assessment and testing process is risk-based. Self-declaration is possible for some zones	All product types require a CoC, regardless of Zone of use of product

Protection classes according to IEC/EN 60529

The IP Code, or IEC standard 60529, classifies and rates the degree of protection provided by mechanical casings and electrical enclosures against intrusion, dust, accidental contact, and water. The equivalent European standard is EN 60529.

The scheme below shows the meaning of each or part of the IP code:



The current categories are the ones listed in the following table:

FIRST DIGIT - SOLID PARTICLE		
Code	Effective against	Description
X	-	No data available to specify a protection rating
IP0*	-	No protection against contact and ingress of objects
IP1*	> 50 mm	Any large surface of the body, such as the back of a hand, but no protection against deliberate contact with a body part
IP2*	> 12.5 mm	Fingers or similar objects
IP3*	> 2.5 mm	Tools, thick wires, etc.
IP4*	> 1 mm	Most wires, slender screws, large ants etc.
IP5*	Dust protected	Ingress of dust is not entirely prevented, but it must not enter in sufficient quantity to interfere with the satisfactory operation of the equipment.
IP6*	Dust-tight	No ingress of dust; complete protection against contact (dust-tight). A vacuum must be applied. Test duration of up to 8 hours based on airflow.

SECOND DIGIT - LIQUID INGRESS

Code	Protection against	Effective against	Details
X	-	-	No data available to specify a protection rating
IP*0	None	-	No protection against ingress of water
IP*1	Dripping water	Dripping water (vertically falling drops) shall have no harmful effect on the specimen when mounted in an upright position onto a turntable and rotated at 1 RPM.	Test duration: 10 min Water equivalent to 1 mm/min of rainfall
IP*2	Dripping water when tilted at 15°	Vertically dripping water shall have no harmful effect when the enclosure is tilted at an angle of 15° from its normal position. A total of four positions are tested within two axes.	Test duration: 2.5 min for every direction of tilt (10 min total) Water equivalent to 3 mm rainfall per minute
IP*3	Spraying water	Water falling as a spray at any angle up to 60° from the vertical shall have no harmful effect, utilizing either: a) an oscillating fixture, or b) A spray nozzle with a counterbalanced shield. Test a) is conducted for 5 minutes, then repeated with the specimen rotated horizontally by 90° for the second 5-minute test. Test b) is conducted (with shield in place) for 5 minutes minimum.	For a spray nozzle: Test duration: 1 minute per square meter for at least 5 minutes Water volume: 10 l/min Pressure: 0.5-1.5 bar For an oscillating tube: Test duration: 10 minutes Water volume: 0.07 l/min per hole
IP*4	Splashing of water	Water splashing against the enclosure from any direction shall have no harmful effect, utilizing either: a) an oscillating fixture, or b) A spray nozzle with no shield. Test a) is conducted for 10 minutes. b) is conducted (without shield) for 5 minutes minimum.	Oscillating tube: Test duration: 10 minutes, or spray nozzle (same as IP*3 spray nozzle with the shield removed)
IP*5	Water jets	Water projected by a nozzle (6.3 mm) against enclosure from any direction shall have no harmful effects.	Test duration: 1 minute per square meter for at least 3 minutes Water volume: 12.5 l/min Pressure: 30 kPa at distance of 3 m
IP*6	Powerful water jets	Water projected in powerful jets (12.5 mm) against the enclosure from any direction shall have no harmful effects.	Test duration: 1 minute per square meter for at least 3 minutes Water volume: 100 l/min Pressure: 100 kPa at distance of 3 m
IP*6K	Powerful water jets with increased pressure	Water projected in powerful jets (6.3 mm nozzle) against the enclosure from any direction, under elevated pressure, shall have no harmful effects. Found in DIN 40050, and not IEC 60529.	Test duration: 1 minute per square meter for at least 3 minutes Water volume: 100 l/min Pressure: 100 kPa at distance of 3 m
IP*7	Immersion, up to 1 m depth	Ingress of water in harmful quantity shall not be possible when the enclosure is immersed in water under defined conditions of pressure and time (up to 1 meter of submersion).	Test duration: 30 min. Tested with the lowest point of the enclosure 1,000 mm below the surface of the water, or the highest point 150 mm below the surface, whichever is deeper.
IP*8	Immersion, > 1 m	The equipment is suitable for continuous immersion in water under conditions which shall be specified by the manufacturer. However, with certain types of equipment, it can mean that water can enter but only in such a manner that it produces no harmful effects. The test depth and duration is expected to be greater than the requirements for IPx7, and other environmental effects may be added, such as temperature cycling before immersion.	Test duration: agreement with manufacturer Depth specified by the manufacturer, generally up to 3 m

IP*9K	Powerful high-temperature water jets	<p>Protected against close-range high pressure, high-temperature spray downs. The specific requirements for the test nozzle are shown in figures 7, 8, & 9 of IEC (or EN) 60529.</p> <p>Smaller specimens rotate slowly on a turntable, from 4 specific angles. Larger specimens are mounted in the intended position when being used, no turntable required, and are tested freehand for at least 3 minutes at a distance of 0.15-0.2 meters. This test is identified as IPx9 in IEC 60529.</p>	<p>Test duration: Fixture: 30 s in each of 4 angles (2 min total), Freehand: 1 min/m², 3 min minimum</p> <p>Water volume: 14-16 l/min Pressure: 8-10 MPa (80-100 bar) at distance of 0.10-0.15 meters</p> <p>Water temperature: 80°C</p>
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Notes: All tests with the letter "K" are defined by ISO 20653 (replacing DIN 40050-9) and are not found in IEC 60529, except for IPx9 which is the same as the IP69K water test.

ADDITIONAL LETTER (OPTIONAL) - FOR THE PROTECTION OF PERSONNEL AGAINST ACCESS TO HAZARDOUS PARTS WITH

IP**A	Back of hand
IP**B	Finger
IP**C	Tool
IP**D	Wire

SUPPLEMENTARY LETTER (OPTIONAL) - FOR THE PROTECTION OF EQUIPMENT SPECIFIC TO

IP***H	High voltage apparatus
IP***M	Motion during water test
IP***S	Stationary during water test
IP***W	Weather conditions

1 SOLENOID VALVES

2-WAY

GENERAL PURPOSE

DIRECT ACTING

21A - 21L - 21ALB SERIES	37
21A16 SERIES	45
21TG SERIES	49
21MO - 4144 - 5315 SERIES	53
21JN - 21JL SERIES	57
21Z SERIES	61

INDIRECT ACTING

21WA-W - 21X SERIES	65
21H SERIES	71
21PW - 21A-PW SERIES	75
4743 SERIES	79
HIGH PRESSURE SERIES	81

COMBINED ACTING

21HT-HF-IH SERIES	85
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3-WAY

DIRECT ACTING

31A - 31L - 31ALB SERIES	91
31JN - 31JL SERIES	95
31Z SERIES	99

5-WAY

INDIRECT ACTING

51 SERIES	101
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FOOD GRADE NSF

2-WAY

DIRECT ACTING

21A - 21L - 21ALB - 21AP SERIES	103
21JN - 21JL - 21JP SERIES	109
AM - JM SERIES	113

DIRECT ACTING TOTAL SEPARATION

21KP SERIES	119
21SBG SERIES	123

3-WAY

DIRECT ACTING

31A - 31L - 31ALB - 31AP SERIES	127
31JN - 31JL - 31JP SERIES	135

DIRECT ACTING

31KP SERIES	139
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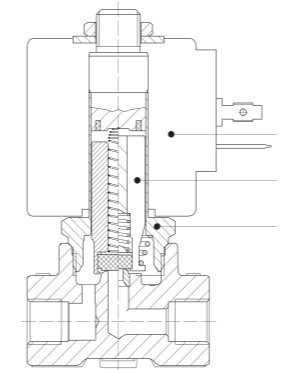
21A - 21L - 21ALB SERIES

General purpose, 2-way, Direct Acting

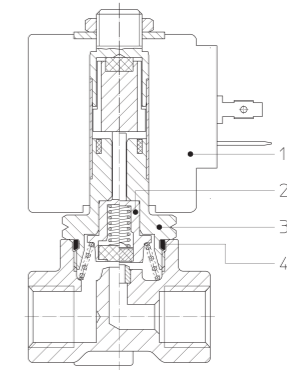
21A and **21L** are direct acting solenoid valves. The fixed core and armature tube are welded together to enhance pressure resistance and leak-tightness. Valves do not require a minimum operating pressure. A large selection of seal materials provides wide chemical compatibility. AC/DC interchangeability of the coil is possible for both NC and NO configurations.



2/2 NC



2/2 NO



Solenoid Valves ■ General purpose ■ 2-way ■ Direct Acting ■ 21A 21L SERIES

TECHNICAL DATA

PORT CONNECTION	G1/8, G1/4, G3/8, G1/2, Flange connection					
SEALING MATERIALS	soft			hard		
	NBR	FKM	EPDM	HNBR	RUBY	PTFE
FLUID TEMPERATURE	-10°C +90°C	-10°C +140°C	-10°C +140°C	-30°C +130°C	-40°C +180°C	-40°C +180°C
FLUIDS	Air, inert gases, water	Air, oils, gasoline, diesel	Water, steam	Air, inert gases, glycol	Water, steam, oils, diesel	Water, steam, aggressive chemical
VISCOSITY	12 cSt up to orifice 1.5 mm, 37 cSt for orifice 2.0 mm, 53 cSt for orifice 2.5 mm and above					
TUBE Ø - COIL WIDTH - SERIES	Ø 13 mm - 30 mm		BDA08, BVA08 (CLASS F), BDV08 (CLASS H)			
	Ø 13 mm - 36 mm		UDV16 (CLASS H)			
	Ø 13 mm - 52 mm		GDV14 (CLASS H)			
INSTALLATION	As required, preferably with actuator upright					
PROTECTION DEGREE	IP 65 EN 60529 (DIN 40050) with connector					

■ MOPD values are referred to "standard power" coil range. Please refer to coil chapter.

MATERIALS

BODY	Brass UNI EN 12165 CW617N, Stainless steel AISI 316
ORIFICE*	≤ 3 mm Stainless steel AISI series 300 > 3 mm Brass - UNI EN 12165 CW617N
ARMATURE TUBE	Stainless steel AISI series 300
FIXED CORE	Stainless steel AISI series 400
PLUNGER	Stainless steel AISI series 400
PHASE DISPLACEMENT RING	Copper (Cu 99.9%) or Gold plated copper
SPRING	Stainless steel AISI series 300
SEALING	V=FKM, B=NBR, E=EPDM, F=HNBR, R=RUBY, T=PTFE O-R flange sealing are made of VMQ

■ Orifice for valves with AISI 316 body is in AISI 316 material.

■ **CE**
- 2014/35/EU (LVD)
- 2014/30/EU (EMC)
- 2014/68/EU (PED)
art. 4.3 up to 1"

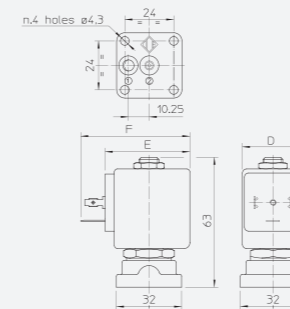
■ **INDUSTRIAL OXYGEN**
Special versions suitable for contact with industrial oxygen are available. Please refer to codification options.

■ **UL** recognized and **VDE, CSA** approved coils are available for this series, please refer to coil section.

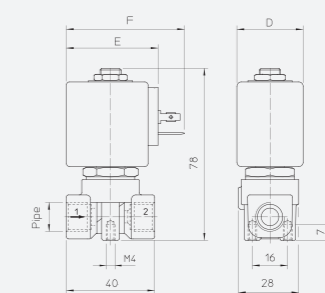
■ **EXPLOSION PROOF COILS** suitable for zone 2-22 are available for this series. Please refer to ATEX coil section for further details.

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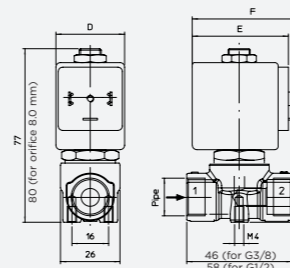
DRAWING 1



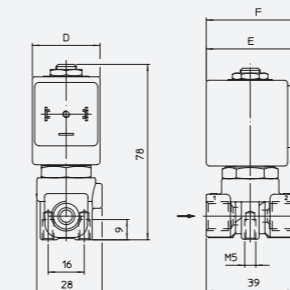
DRAWING 2



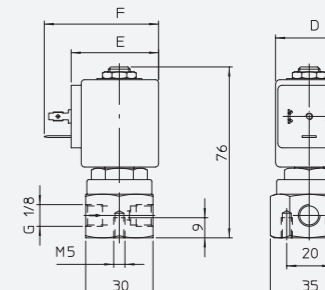
DRAWING 3



DRAWING 4



DRAWING 5



COIL SERIES	DIMENSIONS [mm]		
	D	E	F
BDA08, BDV08	30	42	54
UDV16	36	48	60
GDV14	52	55	67

■ The fluids listed in the "technical data" tables should be considered as a recommendation. Please check the chemical compatibility of the fluids with the materials of the valve at RFQ stage.
■ G type thread in accordance with ISO 228/1.
■ For spare parts list please refer to the dedicated chapter.

2/2 NO RUBY SEALING

PIPE	ORIFICE SIZE [mm]	Kv [l/min]	COIL SERIES	PRESSURE [bar]			CODE		DRAWING REF.	
				MIN.	MOPD		BRASS	STAINLESS STEEL		
					AC	DC				PS
G1/8	1,5	1,4	B**08	0	35	35	40	21A3ZR15D	-	2
			B**08	0	30	30	40	21A3ZR20D	-	2
	2,5	3,2	B**08	0	16	16	40	21A3ZR25D	-	2
			UDV16	0	17	17	40	21A3ZR25G	-	2
			GDV14	0	17	17	40	21A3ZR25G	-	2
			B**08	0	10	10	40	21A3ZR30D	-	2
G1/4	1,5	1,4	B**08	0	35	35	40	21A2ZR15D	-	2
			B**08	0	30	30	40	21A2ZR20D	-	2
	2,5	3,2	B**08	0	16	16	40	21A2ZR25D	-	2
			UDV16	0	17	17	40	21A2ZR25G	-	2
			GDV14	0	17	17	40	21A2ZR25G	-	2
			B**08	0	10	10	40	21A2ZR30D	-	2
FLANGE CONN.	1,1	0,7	B**08	0	40	40	40	21A1ZR11D	-	1
			B**08	0	35	35	40	21A1ZR15D	-	1
	1,5	1,4	GDV14	0	35	35	40	21A1ZR15G	-	1
			B**08	0	30	30	40	21A1ZR20D	-	1

2/2 NC HIGH PRESSURE

PIPE	ORIFICE SIZE [mm]	Kv [l/min]	POWER RANGE	PRESSURE [bar]			CODE		DRAWING REF.	
				MIN.	MOPD		BRASS	STAINLESS STEEL		
					AC	DC				PS
G1/8	1,2	1	B**08	0	100	90	100	21A3KOT12-XC	2	
			UDV16	0	100	100	100	21A3KOT12-XC	2	
			GDV14	0	-	-	100	21A3KOT12-XC	2	
	1,5	1,5	B**08	0	90	60	100	-	21L1KIT15-XC	5
			UDV16	0	100	60	100	-	21L1KIT15-XC	5
			GDV14	0	100	100	100	-	21L1KIT15-XC	5
G1/4	1	1	B**08	0	100	90	100	21A2KOT10-XC	2	
			UDV16	0	100	100	100	21A2KOT10-XC	2	
			GDV14	0	-	-	100	21A2KOT10-XC	2	
			B**08	0	100	90	100	21A2KOT12-XC	2	
			UDV16	0	100	100	100	21A2KOT12-XC	2	
			GDV14	0	-	-	100	21A2KOT12-XC	2	
	1,2	1	B**08	0	-	-	130	21A2KOR12-XC	2	
			UDV16	0	-	-	130	21A2KOR12-XC	2	
			GDV14	0	130	130	130	21A2KOR12-XC	2	
			B**08	0	90	60	100	-	21L2KIT15-XC	4
			UDV16	0	100	60	100	-	21L2KIT15-XC	4
			GDV14	0	100	100	100	-	21L2KIT15-XC	4
	1,5	1,5	B**08	0	37	17	40	21A2KOR20-XC	2	
			UDV16	0	40	23	40	21A2KOR20-XC	2	
			GDV14	0	-	-	40	21A2KOR20-XC	2	
			B**08	0	30	12	40	21A2KOR25-XC	2	
			UDV16	0	-	-	40	21A2KOR25-XC	2	
			GDV14	0	-	-	40	21A2KOR25-XC	2	
	2,5	3,2	B**08	0	25	8	40	21A2KOR30-XC	2	
			UDV16	0	-	-	40	21A2KOR30-XC	2	
			GDV14	0	-	-	40	21A2KOR30-XC	2	
			B**08	0	100	90	130	21A1KOT12-XC	21ALBKIT12-XC	1
			UDV16	0	100	100	130	21A1KOT12-XC	21ALBKIT12-XC	1
			GDV14	0	-	-	130	21A1KOT12-XC	21ALBKIT12-XC	1
3	4	B**08	0	90	60	100	21A1KOT15-XC	1		
		UDV16	0	100	100	100	21A1KOT15-XC	1		
		GDV14	0	100	100	100	21A1KOT15-XC	1		
		B**08	0	14	8	100	21A1KOT30-XC	1		
		UDV16	0	27	16	100	21A1KOT30-XC	1		
		GDV14	0	-	-	100	21A1KOT30-XC	1		

■ The use of rigid sealings usually implies a slight leakage, limited within 300 cm³/h of air at the pressure of 10 bar.
 ■ Base O-Rings for flange connection versions are in VMQ material.

I	II	III	IV	V	VI	VII	VIII	IX	X	XI
2	1		A	2	K		V	30	-	

I. NUMBER OF WAYS
2 - 2-way

II. NUMBER OF ELEMENTS
1 - 1 element

III. ARMATURE TUBE MATERIAL
Blank - std. material
6 - AISI 316 (optional, valid for NC versions, brass body only)

IV. SERIES TYPE
A - brass body
L - StSt body
AL - StSt body with flange connection

V. CONNECTIONS for A series
1 - flange connection
3 - G1/8
2 - G1/4
5 - G3/8
8 - G1/2

for L series
1 - G1/8
2 - G1/4
for AL series
B - flange connection

VI. CORE TUBE TYPE
K - for 2/2 NC valves
Z - for 2/2 NO valves

VII. PHASE DISP. RING MATERIAL
O or blank - copper
1 - gold plated copper

VIII. SEALING MATERIAL
V - FKM
E - EPDM
B - NBR
F - HNBR
R - RUBY
T - PTFE

IX. ORIFICE Ø MULTIPLIED BY 10

X. COIL IDENTIFICATION
Blank - std. for NC
D - B**08 coil, only for 2/2 NO valves
G - UDV16 and GDV14 coils, only for 2/2 NO valves

XI. OPTIONS
W - variable pitch spring or double spring, improved pressure range
XC - special plunger for high pressure range
OX - Degreased version for industrial oxygen use.
OR - O-ring sealing between body and armature tube
N - nickel plated body
M - manual operator
ORV - flange O-Rings in FKM material
ORT - flange O-Rings in PTFE material

OPTION	VALVE TYPE	BODY MATERIAL	SEALING MATERIAL	VALVE SIZE/CONNECTIONS					NOTES
				G1/8	G1/4	G3/8	G1/2	FLANGE CONN.	
W	NC	Brass & StSt	V, B, E, T	X	X	X	X	X	Ref. to improved pressure range valves' table for performances
XC	NC	Brass & StSt	R, T	X	X			X	Ref. to high pressure valves' table for performances
OX	NC & NO	Brass & StSt	V	X	X	X	X		PS & MOPD limited to 25 bar. Shall not be used as safety valves
OR	NC	Brass	V, B, E, F, T	X	X	X	X	X	
N	NC & NO	Brass	V, B, E, F, T	X	X	X	X	X	G1/2 size with minimum order quantity
M	NC	Brass	V, B, E	X	X				
ORV	NC & NO	Brass & StSt	V, R, T					X	
ORT	NC & NO	Brass & StSt	R, T					X	

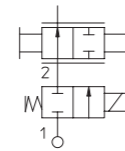
OPTIONS AVAILABILITY

■ Please contact ODE if you wish to combine more options.

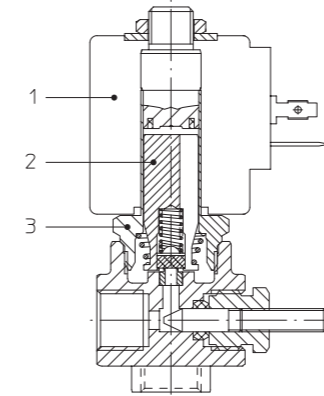
21A16 SERIES

General Purpose, 2-way, Direct Acting

21A16 are direct acting solenoid valves. The fixed core and armature tube are welded together to enhance pressure resistance and leak-tightness. Valves do not require a minimum operating pressure. These valves are provided with an integrated manual flow regulator on the outlet port.



NC, BRASS



Solenoid Valves ■ General purpose ■ 2-way ■ Direct Acting ■ **21A16**

TECHNICAL DATA

PORT CONNECTION	G 1/4			
SEALING MATERIALS	soft		hard	
	FKM	EPDM	PTFE	RUBY
FLUID TEMPERATURE	-10°C +140°C	-10°C +140°C	-40°C +180°C	-40°C +180°C
FLUIDS	oils, gasoline, diesel	water, low pressure steam	water, steam	water, steam
VISCOSITY	53 cSt for orifice 2.5 mm and above			
TUBE Ø - COIL WIDTH - SERIES	ø13 mm - 30 mm		BDA08, BVA08 (CLASS F), BDV08 (CLASS H)	
INSTALLATION	as required, preferably with actuator upright			
PROTECTION DEGREE	IP65 EN 60529 (DIN 40050) with plug connector			

■ MOPD values are referred to "standard power" coil range. Please refer to coil chapter.

MATERIALS

BODY	Brass UNI EN 12165 CW617N
ORIFICE	Stainless steel AISI Series 300
ARMATURE TUBE	Stainless steel AISI Series 300
FIXED CORE	Stainless steel AISI Series 400
PLUNGER	Stainless steel AISI Series 400
PHASE DISPLACEMENT RING	Copper (Cu 99.9%) or gold plated copper
SPRING	Stainless steel AISI Series 300
SEALING	V=FKM, E=EPDM, T=PTFE, R=RUBY

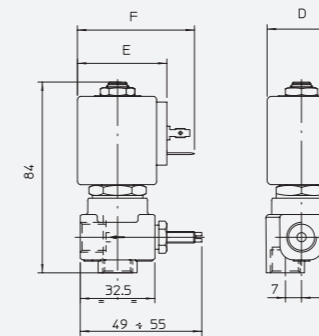
■ **CE**
- 2014/35/EU (LVD)
- 2014/30/EU (EMC)
- 2014/68/EU (PED)
art. 4.3 up to 1"

■ **UL** recognized and **VDE, CSA**
approved coils are available for this series, please refer to coil section.

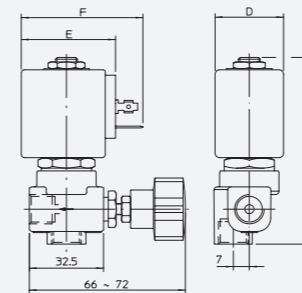
■ **EXPLOSION PROOF COILS**
suitable for zone 2-22 are available for this series. Please refer to ATEX coil section for further details.

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DRAWING 1



KNOB OPTION



PIPE	DIMENSIONS [mm]		
	D	E	F
ISO 228/1 G1/4	30	42	54

■ The fluids listed in the "technical data" tables should be considered as a recommendation. Please check the chemical compatibility of the fluids with the materials of the valve at RFQ stage.
■ For spare parts list please refer to the dedicated chapter.

2/2 NC
SOFT SEALING

PIPE ISO 228/1	ORIFICE SIZE Ø [mm]	Kv [l/min]	COIL SERIES	PRESSURE [bar]			CODE		DRAWING REFERENCE	
				MIN	MOPD		PS	BRASS		STAINLESS STEEL
					AC	DC				
G1/4	2,5	3,2	B**08	0	14	9	25	21A16KE25	-	1
	3	4	B**08	0	10	6	25	21A16KE30	-	1

For sealing different from EPDM replace the letter "E" with the ones corresponding to the other materials
E=EPDM, V=FKM

2/2 NC
HARD SEALING

PIPE ISO 228/1	ORIFICE SIZE Ø [mm]	Kv [l/min]	COIL SERIES	PRESSURE [bar]			CODE		DRAWING REFERENCE	
				MIN	MOPD		PS	BRASS		STAINLESS STEEL
					AC	DC				
G1/4	2,5	3,2	B**08	0	14	5	25	21A16KT25	-	1
	3	4	B**08	0	10	4	25	21A16KT30	-	1

For sealing different from PTFE replace the letter "T" with the ones corresponding to the other materials
T=PTFE, R=RUBY

CODIFICATION

I	II	III	IV	V	VI	VII	VIII
2	1	A16	K		E	25	-

I. NUMBER OF WAYS

2 - 2 - way

II. NUMBER OF ELEMENTS

1 - 1 element

III. SERIES

A16 - brass body, Ø13 mm core tube
flowrate regulation, G1/4

IV. CORE TUBE TYPE

K - for 2/2 NC valves

V. PHASE DISP. RING MATERIAL

blank - copper
1 - gold plated copper

VI. SEALING MATERIAL

V - FKM
E - EPDM
T - PTFE
R - RUBY

VII. ORIFICE Ø [mm] MULTIPLIED BY 10

VIII. OPTIONS

XV - knob
XVN - knob and nickel plated body

OPTIONS
AVAILABILITY

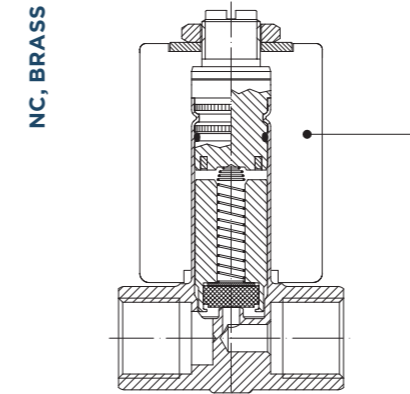
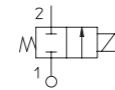
OPTION	VALVE TYPE	BODY MATERIAL	SEALING MATERIAL	VALVE SIZE/CONNECTIONS	NOTES
				G1/4	
XV	2/2 NC	Brass	V, E, T, R	X	
XVN	2/2 NC	Brass	V, E, T	X	

Please contact ODE if you wish to combine more options.

21TG SERIES

General Purpose, 2-way, Direct Acting

21TG are one-piece construction, direct acting solenoid valves. Body and armature tube are integrated in one single component. Valves do not require a minimum operating pressure.



Solenoid Valves ■ General purpose ■ 2-way ■ Direct Acting ■ **21TG**

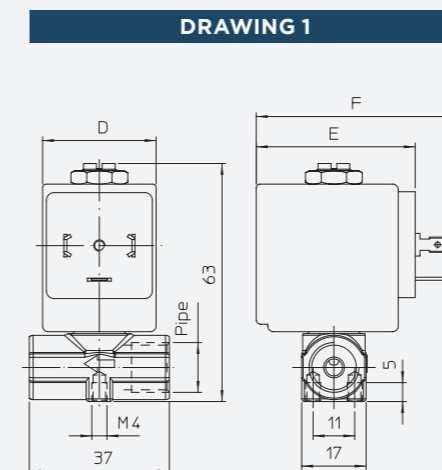
TECHNICAL DATA

PORT CONNECTION	G1/8 to G1/4	
SEALING MATERIALS	NBR	FKM
FLUID TEMPERATURE	-10°C +90°C	-10°C +140°C
FLUIDS	Air, inert gas, water	oils, gasoline, diesel
VISCOSITY	37 cSt for orifice 1.7 and 2.2 mm, 53 cSt for orifice 2.8 mm and above	
TUBE Ø - COIL WIDTH - SERIES	Ø 13 mm - 30 mm	BDA08, BVA08 (CLASS F), BDV08 (CLASS H)
INSTALLATION	as required, preferably with actuator upright	
PROTECTION DEGREE	IP65 EN 60529 (DIN 40050) with plug connector	

■ MOPD values are referred to "standard power" coil range. Please refer to coil chapter.

MATERIALS

BODY, ARMATURE TUBE, ORIFICE	Brass UNI EN 12165 CW617N
ARMATURE TUBE O-RING	B=NBR, V=FKM
FIXED CORE	Stainless steel AISI Series 400
PLUNGER	Stainless steel AISI Series 400
PHASE DISPLACEMENT RING	Copper (Cu 99.9%) or gold plated copper
SPRING	Stainless steel AISI Series 300
SEALING	B=NBR, V=FKM



COIL SERIES	DIMENSIONS [mm]		
	D	E	F
B**08	30	42	54

■ **CE**
- 2014/35/EU (LVD)
- 2014/30/EU (EMC)
- 2014/68/EU (PED)
art. 4.3 up to 1"

■ **UL** recognized and **VDE, CSA** approved coils are available for this series, please refer to coil section.

■ **EXPLOSION PROOF COILS** suitable for zone 2-22 are available for this series. Please refer to ATEX coil section for further details.

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■ The fluids listed in the "technical data" tables should be considered as a recommendation. Please check the chemical compatibility of the fluids with the materials of the valve at RFQ stage.
■ For spare parts list please refer to the dedicated chapter.

PIPE	ORIFICE SIZE	Kv	COIL SERIES	PRESSURE [bar]				CODE		DRAWING REFERENCE
				MIN	MOPD		PS	BRASS	STAINLESS STEEL	
					AC	DC				
G1/8	1,7	1,5	B**08	0	30	20	40	21TG1KROV17	-	1
	2,2	2,1	B**08	0	20	15	40	21TG1KROV22	-	1
	2,8	3,5	B**08	0	12	10	40	21TG1KROV28	-	1
	4,0	5,0	B**08	0	6	3	40	21TG1KROV40	-	1
G1/4	1,7	1,5	B**08	0	30	20	40	21TG2KROV17	-	1
	2,2	2,1	B**08	0	20	15	40	21TG2KROV22	-	1
	2,8	3,5	B**08	0	12	10	40	21TG2KROV28	-	1
	4,0	5,0	B**08	0	6	3	40	21TG2KROV40	-	1

▪ For sealing different from FKM replace the letter "V" with the ones corresponding to the other materials
 V=FKM, B = NBR

CODIFICATION

I	II	III	IV	V	VI	VII	VIII	IX	X
2	1	TG	2	KR	0	V	17	-	X

- I. NUMBER OF WAYS**
2 - 2 - way
- II. NUMBER OF ELEMENTS**
1 - 1 element
- III. SERIES**
TG - 2/2 NC with integrated core tube
- IV. CONNECTIONS**
1 - G1/8
2 - G1/4
- V. CORE TUBE TYPE**
KR - for 2/2 NC valves, 8 W coil
- VI. PHASE DISP. RING MATERIAL**
0 or blank - copper
- VII. SEALING MATERIAL**
V - FKM
B - NBR
- VIII. ORIFICE Ø [mm] MULTIPLIED BY 10**
- IX. OPTIONS**
XF - integrated filter on inlet port

OPTIONS AVAILABILITY

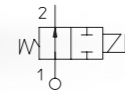
OPTION	VALVE TYPE	BODY MATERIAL	SEALING MATERIAL	VALVE SIZE/CONNECTIONS		NOTES
				G1/8	G1/4	
XF	2/2 NC	Brass	B, V	X		Non removable filter, StSt material

▪ Please contact ODE if you wish to combine more options.

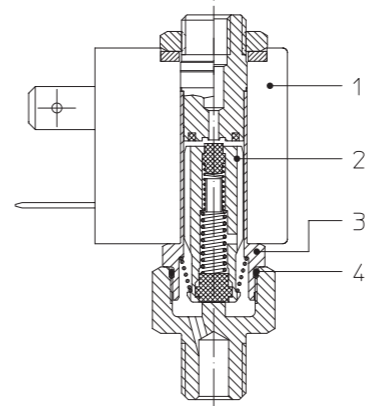
21MO - 4144 - 5315 SERIES

General Purpose, 2-way, Direct Acting

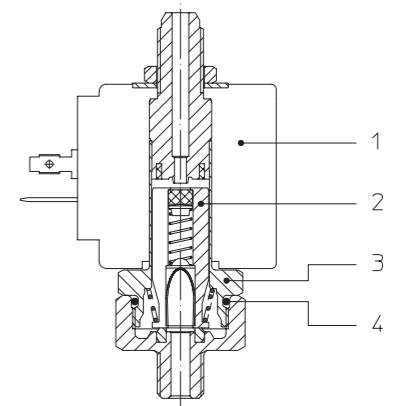
21MO are normally open, direct acting solenoid valves. The inline construction of inlet and outlet port ensure maximum compactness.



NO, 22 mm COIL



NO, 30 mm COIL



Solenoid Valves ■ General purpose ■ 2-way ■ Direct Acting ■ **21MO - 4144 - 5315 SERIES**



TECHNICAL DATA

PORT CONNECTION	G1/8 to G1/4	
SEALING MATERIALS	NBR	FKM
FLUID TEMPERATURE	-10°C +90°C	-10°C +140°C
FLUIDS	Air, inert gas, water	oils, gasoline, diesel
VISCOSITY	12 cSt up to orifice 1.5 mm, 37 cSt for orifice 2.0 mm, 53 cSt for orifice 2.5 mm and above	
TUBE Ø - COIL WIDTH - SERIES	ø 10 mm - 22 mm	LBA05, LTA05 (class F), LBV05 (class H)
	ø 13 mm - 30 mm	BDA08, BVA08 (CLASS F), BDV08 (CLASS H)
INSTALLATION	as required, preferably with actuator upright	
PROTECTION DEGREE	IP65 EN 60529 (DIN 40050) with plug connector	

■ MOPD values are referred to "standard power" coil range. Please refer to coil chapter.

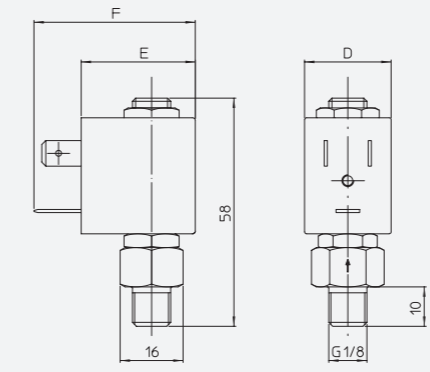
MATERIALS

BODY, ORIFICE	Brass UNI EN 12165 CW617N
ARMATURE TUBE	Stainless steel AISI Series 300
FIXED CORE	Stainless steel AISI Series 400
PLUNGER	Stainless steel AISI Series 400
PHASE DISPLACEMENT RING	Copper (Cu 99,9%) or gold plated copper
SPRING	Stainless steel AISI Series 300
SEALING	B=NBR, V=FKM

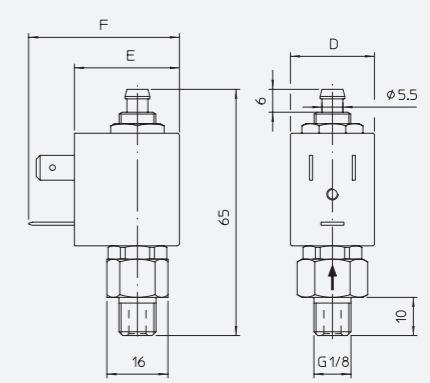
- **CE**
- 2014/35/EU (LVD)
- 2014/30/EU (EMC)
- 2014/68/EU (PED)
art. 4.3 up to 1"
- **UL** recognized and **VDE, CSA** approved coils are available for this series, please refer to coil section.
- **EXPLOSION PROOF COILS** suitable for zone 2-22 are available for this series. Please refer to ATEX coil section for further details.

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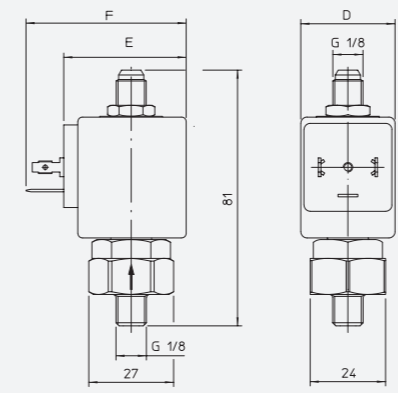
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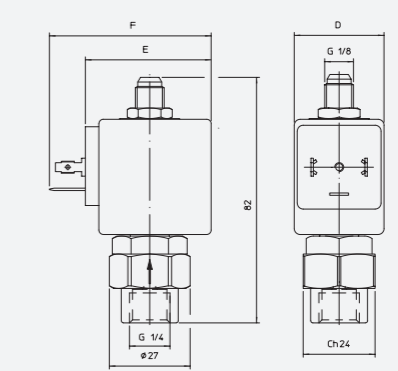
DRAWING 2



DRAWING 3



DRAWING 4



COIL SERIES	DIMENSIONS [mm]		
	D	E	F
L**05	22	28±1	39,5
B**08	30	42	54

■ The fluids listed in the "technical data" tables should be considered as a recommendation. Please check the chemical compatibility of the fluids with the materials of the valve at RFQ stage.
■ For spare parts list please refer to the dedicated chapter.

2/2 NO

PIPE ISO 228/1	ORIFICE SIZE Ø [mm]	Kv [l/min]	COIL SERIES	PRESSURE [bar]						CODE		DRAWING REFERENCE
				MIN	MOPD (AIR, GASES)		MOPD (LIQUIDS)		PS	BRASS	STAINLESS STEEL	
					AC	DC	AC	DC				
G1/8	1,5	0,8	L**05	0	12	12	12	12	40	4144W0V15	-	1
	1,7	1,7	L**05	0	15	-	15	-	40	4144XPV17	-	2
	2,5	3,5	B**08	0	18	-	8	-	25	21M0AV25	-	3
				4	-	18	-	8	25	21M0AV25	-	3
G1/4	2,5	3,5	B**08	0	18	-	8	-	25	5315A0V25	-	4
				-	-	18	-	8	25	5315A0V25	-	4

For sealing different from FKM replace the letter "V" with the ones corresponding to the other materials
 Series 21M0, series 5315 V=FKM, B=NBR
 Series 4144 V=FKM

CODIFICATION



I. SERIES

21M0 - IN G1/8 (M), 30 mm coil
 4144 - IN G1/8 (M), 22 mm coil
 5315 - IN G1/4 (F), 30 mm coil

II. CORE TUBE TYPE

A - OUT G1/8 (M), 30 mm coil
 W - OUT M5 (F), 22 mm coil
 XP - OUT barbed port, 22 mm coil

III. PHASE DISP. RING MATERIAL

O or blank- copper

IV. SEALING MATERIAL

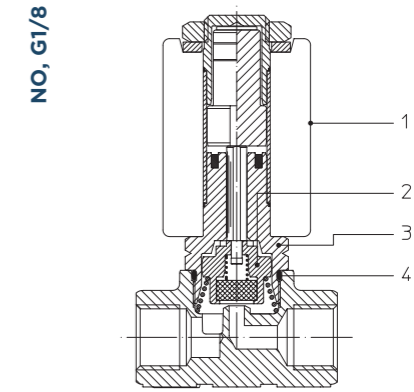
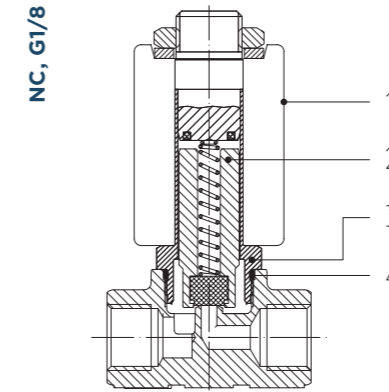
V - FKM
 B - NBR

V. ORIFICE Ø [mm] MULTIPLIED BY 10

21JN - 21JL SERIES

General purpose - 2-way - direct acting

21JN - 21JL Series are compact 2-way direct acting valves with 10 mm armature tube. Thanks to a wide range of flow and pressure ratings these valves can be suitable for several applications. The armature tube is made of stainless steel to ensure greater strength and durability to the valve. Available on request the version with screw manual operator.



Solenoid valves - General purpose - 2-way - Direct Acting ■ 21JN - 21JL SERIES

TECHNICAL DATA

PORT CONNECTION	G1/8, M5, flange connection	
SEALING MATERIALS	NBR	FKM
FLUID TEMPERATURE	-10°C +90°C	-10°C +140°C
FLUIDS	Air, inert gas, water	
VISCOSITY	12 cSt up to orifice 1.5 mm, 37 cSt for orifice 2.0 mm and above	
TUBE Ø - COIL WIDTH - SERIES	LB*2X (class F)	
	LBA05, LTA05 (class F), LBV05 (class H)	
	LBV08 (class H), ED 50%	
INSTALLATION	as required, preferably with actuator upright	
PROTECTION DEGREE	IP65 EN 60529 (DIN 40050) with plug connector	

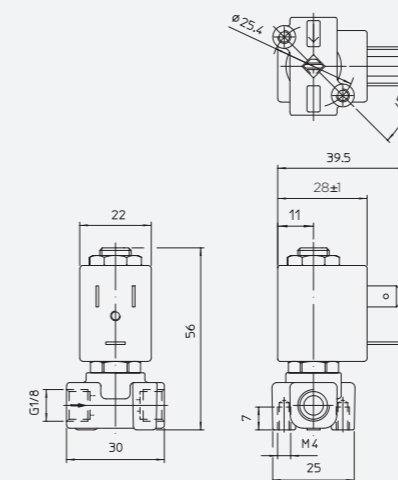
MATERIALS

BODY, ORIFICE	Brass UNI EN 12165 CW617N or AISI 316
ARMATURE TUBE	Stainless steel AISI Series 300
FIXED CORE	Stainless steel AISI Series 400
PLUNGER	Stainless steel AISI Series 400
PHASE DISPLACEMENT RING	Copper (Cu 99,9%) or gold plated copper
SPRING	Stainless steel AISI Series 300
SEALING	B=NBR, V=FKM

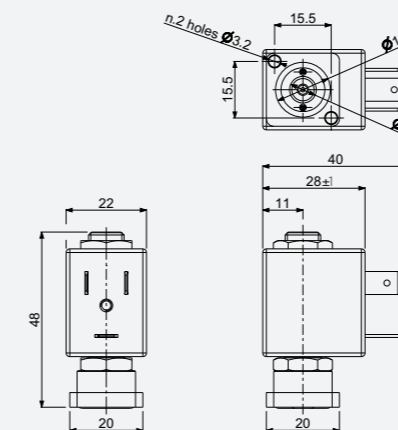
- CE**
 - 2014/35/EU (LVD)
 - 2014/30/EU (EMC)
 - 2014/68/EU (PED)
 art. 4.3 up to 1"
- INDUSTRIAL OXYGEN**
 Special versions suitable for contact with industrial oxygen are available. Please refer to codification options.
- UL recognized and VDE, CSA**
 approved coils are available for this series, please refer to coil section.
- EXPLOSION PROOF COILS**
 suitable for zone 2-22 are available for this series. Please refer to ATEX coil section for further details.

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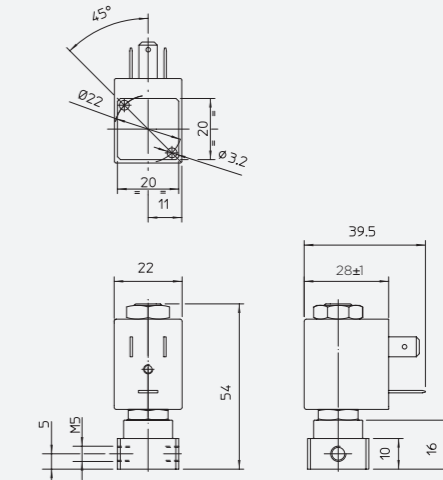
DRAWING 1



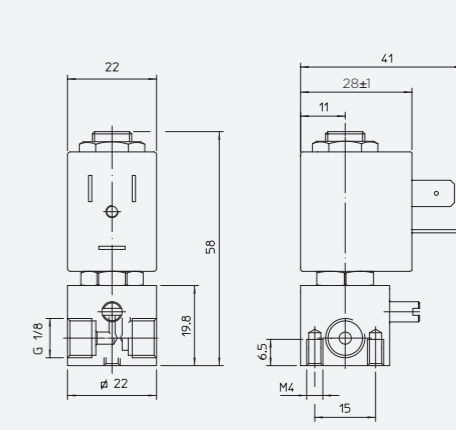
DRAWING 3



DRAWING 2



DRAWING 4



■ The fluids listed in the "technical data" tables should be considered as a recommendation. Please check the chemical compatibility of the fluids with the materials of the valve at RFQ stage.
 ■ G type thread in accordance with ISO 228/1. M5 thread in accordance with ISO 261.
 ■ For spare parts list please refer to the dedicated chapter.

2/2 NC

PIPE	ORIFICE SIZE		Kv [l/min]	COIL SERIES	PRESSURE [bar]			CODE		DRAWING REFERENCE	
	Ø [mm]	[l/min]			MIN	MOPD		PS	BRASS		STAINLESS STEEL
						AC	DC				
G1/8	1,2	0,7	LB*2X	0	20	3,5	40	21JN1ROV12	21JL1R1V12	1	
			L**05	0	25	12	40	21JN1ROV12	21JL1R1V12	1	
	1,5	1,1	L**05	0	23	10	40	21JN1ROV15	-	1	
			LBV08	0	-	18	40	21JN1ROV15	-	1	
	2,0	1,8	L**05	0	22	8	40	21JN1ROV20	-	1	
			LBV08	0	-	8	40	21JN1ROV20	-	1	
2,3	2,3	LB*2X	0	6	-	40	21JN1ROV23	21JL1R1V23	1		
		L**05	0	18	8	40	21JN1ROV23	21JL1R1V23	1		
M5	1,0	0,6	L**05	0	26	12	40	21JBMROV10	-	2	
	2,0	1,8	L**05	0	22	10	40	21JBMROV20	-	2	
FLANGE CONN.	1,2	0,7	L**05	0	25	12	40	21JKBROV12	-	3	
	2,3	2,3	L**05	0	18	8	40	21JKBROV23	-	3	

For sealing different from FKM replace the letter "V" with the ones corresponding to the other materials
 Brass Body: V=FKM, B = NBR
 Stainless Steel Body: V=FKM
 LBV08 coil has ED50%. Please refer to coil chapter for further details.

2/2 NC WITH MANUAL OPERATOR

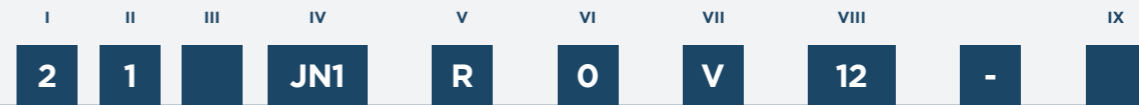
PIPE	ORIFICE SIZE		Kv [l/min]	COIL SERIES	PRESSURE [bar]			CODE		DRAWING REFERENCE	
	Ø [mm]	[l/min]			MIN	MOPD		PS	BRASS		STAINLESS STEEL
						AC	DC				
G1/8	1,2	0,7	L**05	0	25	12	40	21JR1ROV12-M	-	4	
			L**05	0	-	4	40	21JR1ROV25-M	-	4	

For sealing different from FKM replace the letter "V" with the ones corresponding to the other materials
 Brass Body: V=FKM, B = NBR

2/2 NO

PIPE	ORIFICE SIZE		Kv [l/min]	COIL SERIES	PRESSURE [bar]			CODE		DRAWING REFERENCE	
	Ø [mm]	[l/min]			MIN	MOPD		PS	BRASS		STAINLESS STEEL
						AC	DC				
G1/8	1,2	0,7	L**05	0	23	17	40	21JN1IOV12	21JL1IOV12	1	
	2,3	2,3	L**05	0	6	5	40	21JN1IOV12	21JL1IOV12	1	
FLANGE CONN.	1,2	0,7	L**05	0	23	17	40	21JKBIOV12	-	3	
	2,3	2,3	L**05	0	6	5	40	21JKBIOV12	-	3	

For sealing different from FKM replace the letter "V" with the ones corresponding to the other materials
 Brass Body: V=FKM, B = NBR
 Stainless Steel Body: V=FKM



- I. NUMBER OF WAYS**
2 - 2 - way
- II. NUMBER OF ELEMENTS**
1 - 1 element
- III. ARMATURE TUBE MATERIAL**
Blank - std
6 - AISI 316 (optional, valid for NC versions, brass body only)
- IV. SERIES AND CONNECTIONS**
JN1 - brass body G1/8 (F)
JR1 - square brass body G1/8 (F)
JL1 - StSt body G1/8 (F)
JBM - brass body M5 (F)
JKB - brass body subbase
- V. CORE TUBE TYPE**
R - for 2/2 NC valves
I - for 2/2 NO valves
- VI. PHASE DISP. RING MATERIAL**
0 - copper
1 - gold plated copper
- VII. SEALING MATERIAL**
V - FKM
B - NBR
- VIII. ORIFICE Ø [mm] MULTIPLIED BY 10**
- IX. VERSIONS**
M - manual operator, screw type
OX - degreasing for industrial oxygen use

OPTION	VALVE TYPE	BODY MATERIAL	SEALING MATERIAL	VALVE SERIES				NOTES
				JN1/JL1	JR1	JBM	JKB	
M	2/2 NC	BRASS	B, V	X				ONLY FOR JR SERIES
OX	2/2 NC, NO	BRASS, STST	V	X	X	X	X	PS & MOPD limited to 25 bar. Shall not be used as safety valves

CODIFICATION

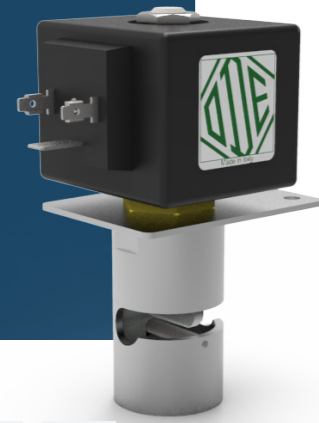
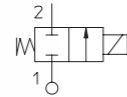
OPTIONS AVAILABILITY

Please contact ODE if you wish to combine more options.

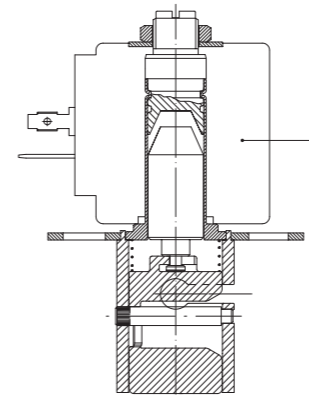
21Z SERIES

General purpose - 2-way - direct acting

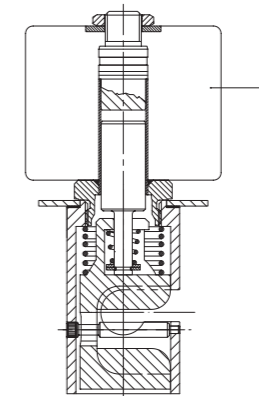
21Z Series are NC and NO pinch valves designed for use in a variety of analytical, medical and industrial applications. These valves are suitable for use with highly aggressive or uncontaminable fluids thanks to the hermetic separation of the mechanical parts and the fluid. Different body sizes available depending on tubing diameter.



2/2 NC BODY Ø25



2/2 NC BODY Ø30



TECHNICAL DATA

TUBING SIZE	from 6 mm to 12 mm	
RECOMMENDED TUBING MATERIAL	VMQ	
RECOMMENDED TUBING HARDNESS	55 ± 3 ShA	
FLUIDS	Liquid, gases	
TUBE Ø - COIL WIDTH - SERIES	ø 13 mm - 30 mm	BDA08, BVA08 (class F), BDV08 (class H)
	ø 13 mm - 36 mm	UDV16 (class H)
	ø 13 mm - 52 mm	GDV14 (class H), GDH14 (class N)
INSTALLATION	as required, preferably with actuator upright	
PROTECTION DEGREE	IP65 EN 60529 (DIN 40050) with plug connector	

■ MOPD values are referred to "standard power" coil range. Please refer to coil chapter.

MATERIALS

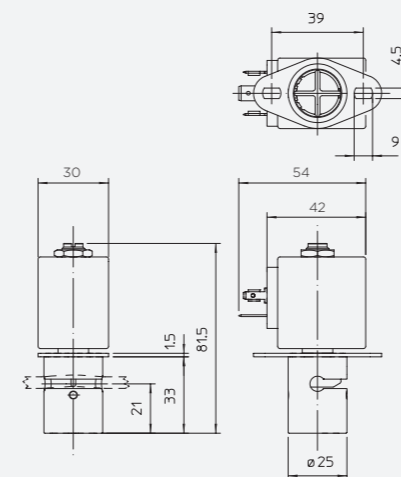
BODY	Anodized Aluminum	
ARMATURE TUBE	Stainless steel AISI series 300 + Brass - UNI EN 12165 CW617N	
FIXED CORE	Stainless steel AISI Series 400	
PLUNGER	Stainless steel AISI Series 400	
SPRING	Stainless steel AISI Series 300	
PINCHING DEVICE	POM	

■ **CE**
- 2014/35/EU (LVD)
- 2014/30/EU (EMC)

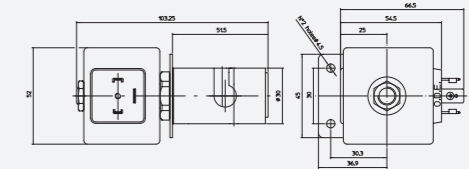
■ **UL** recognized and **VDE, CSA**
approved coils are available for this series, please refer to coil section.

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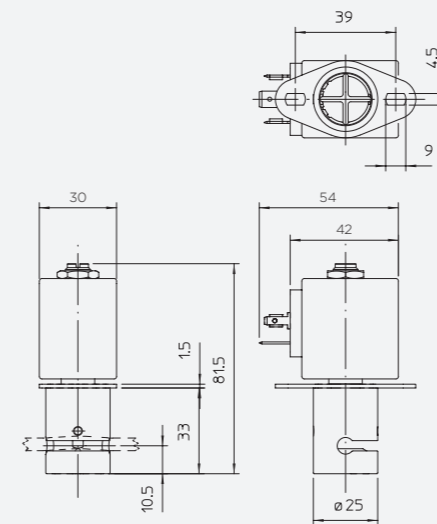
DRAWING 1



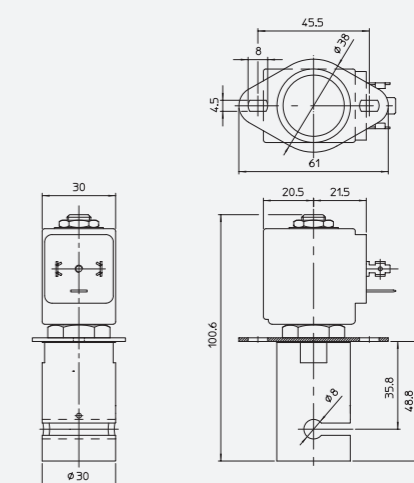
DRAWING 2



DRAWING 3



DRAWING 4



■ Chemical compatibility between fluid and tubing material shall be assessed with tubing manufacturer.
■ MOPD is for reference only. Please contact tubing manufacturers for maximum working pressure and temperature.

2/2 NC

TUBING OD	TUBING ID	MINIMUM THICKNESS	COIL SERIES	PINCHING FORCE	CODE	DRAWING REFERENCE
Ø [mm]	Ø [mm]	[mm]		[kgf]		
6	3,5	1,25	B**08	0,65	21Z25B1S65	1
8	4	2	GD*14	2,6	21Z30G1S70-S	2
10	7	1,5	GDH14	2,6	21Z30G1S98	2
10	7	1,5	GD*14	2,6	21Z30G1S98-S	2
11	8	1,5	GD*14	2,6	21Z30G1S97-S	2
12	7	2,5	GDH14	2,6	21Z30G2S99	2
12	7	2,5	GD*14	2,6	21Z30G2S99-S	2

▪ 21Z30G2S99-S can be sold in AC version with an electrical connector with full bridge rectifier. Please contact ODE to know the available voltages.
 ▪ Other sizing available on request. Please contact ODE.

2/2 NO

TUBING OD	TUBING ID	MINIMUM THICKNESS	COIL SERIES	PINCHING FORCE	CODE	DRAWING REFERENCE
Ø [mm]	Ø [mm]	[mm]		[kgf]		
6	3,5	1,25	B**08	1,5	21Z25B2S65	3
7,94	4,76	1,6	B**08	1,6	21Z30B2S75-C	4

▪ Other sizing available on request. Please contact ODE.

I	II	III	IV	V	VI	VII	VIII	IX
2	1	Z	25	B	2	S	65	-

I. NUMBER OF WAYS
2 - 2 - way

II. NUMBER OF ELEMENTS
1 - 1 element

III. SERIES AND CONNECTIONS
Z - pinch valves

IV. BODY DIAMETER [mm]

V. COIL TYPE
B - BDA, BVA, BDV Series
U - UDV Series
G - GDV, GDH Series

VI. VALVE TYPE
1 - 2/2 NC
2 - 2/2 NO

VII. TUBING MATERIAL
S - VMQ

VIII. TUBING SIZE CODE

IX. VERSIONS
S - reduced stroke
C - special mounting bracket type C

CODIFICATION

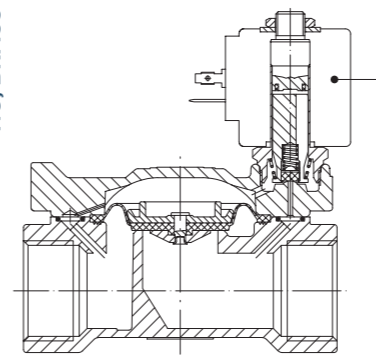
21WA-W - 21X SERIES

General Purpose, 2-way, Indirect Acting

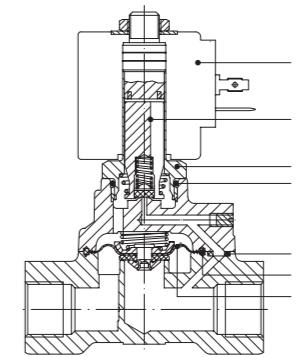
21WA-W and **21X** are indirect acting solenoid valves. A minimum operating pressure differential of 0,1-0,2 bar is required for correct operation. A large selection of seal materials provides wide chemical compatibility. AC/DC interchangeability of the coil is possible for both NC and NO configurations. Slow closing, manual operator, NSF/ANSI 61-G versions are available on request.



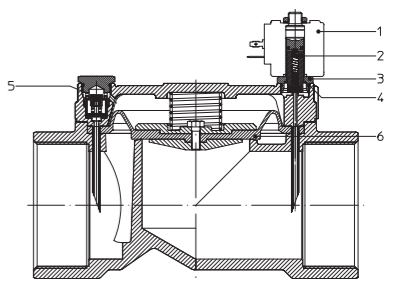
NC, BRASS



NC, STAINLESS STEEL, UP TO 3/4



NC, BRASS, HIGH FLOW RATE



Solenoid Valves ■ General purpose ■ 2-way ■ Indirect Acting ■ 21WA-W - 21X SERIES

TECHNICAL DATA

PORT CONNECTION	G 3/8 : 3				
SEALING MATERIALS	W, WA, X series		W, WA series		X series
	FKM	EPDM	NBR	HNBR	PTFE
FLUID TEMPERATURE	-10°C +140°C	-10°C +140°C	-10°C +90°C	-30°C +130°C	+60°C +180°C *
FLUIDS	oils, gasoline, diesel	water, steam	air, inert gases, water	air, inert gases, glycol	hot water, steam
VISCOSITY	max 12 cSt				
TUBE Ø - COIL WIDTH - SERIES	ø 10 mm - 22 mm		LB*2X (class F)		
	ø 10 mm - 22 mm		LB*05, LTA05 (class F), LBV05 (class H)		
	ø 13 mm - 30 mm		BDA08, BVA08 (class F), BDV08 (class H)		
INSTALLATION	as required, preferably with actuator upright				
PROTECTION DEGREE	IP65 EN 60529 (DIN 40050) with plug connector				

* For a proper functioning of the solenoid valve the minimum temperature should not be less than +60°C; in order to ensure a long diaphragm life, steam filtration is recommended.

MATERIALS

BODY, ORIFICE	Brass UNI EN 12165 CW617N or stainless steel AISI 316
ARMATURE TUBE	Low lead brass for NSF 61 versions
FIXED CORE	Stainless steel AISI Series 300
PLUNGER	Stainless steel AISI Series 400
PHASE DISPLACEMENT RING	Copper (Cu 99,9%) or gold plated copper
SPRING	Stainless steel AISI Series 300
SEALING	B=NBR, V=FKM, E=EPDM, F=HNBR, T=PTFE

CE

- 2014/35/EU (LVD)
- 2014/30/EU (EMC)
- 2014/68/EU (PED)
art. 4.3 - up to 1",
cat. I module A - above 1" up to 2"
cat. I module A (use only with gases of Group 2 or liquids) - above 2"

INDUSTRIAL OXYGEN

Special versions suitable for contact with industrial oxygen are available. Please refer to codification options.

UL recognized and VDE, CSA

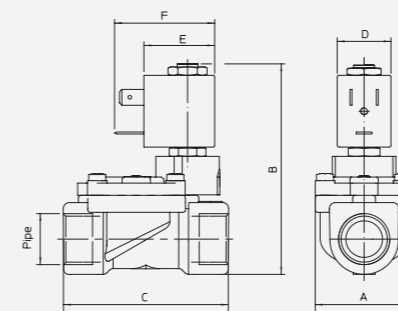
approved coils are available for this series, please refer to coil section.

EXPLOSION PROOF COILS

suitable for zone 2-22 are available for this series. Please refer to ATEX coil section for further details.

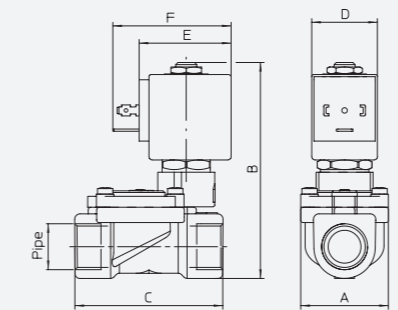
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DRAWING 1



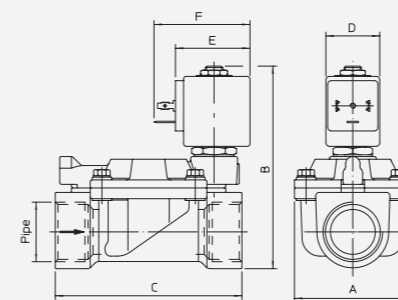
PIPE ISO 228/1	DIMENSIONS [mm]					
	A	B	C	D	E	F
G3/8	40	84,5	60	22	28±1	39,5
G1/2			66			

DRAWING 2



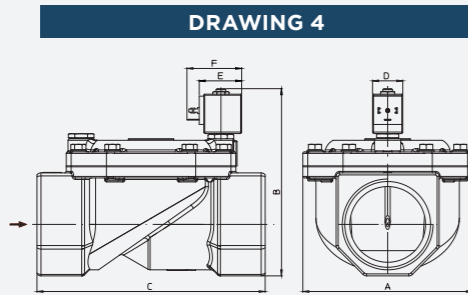
PIPE ISO 228/1	DIMENSIONS [mm]					
	A	B	C	D	E	F
G3/8	40	97	60	30	42	54
G1/2			66			

DRAWING 3

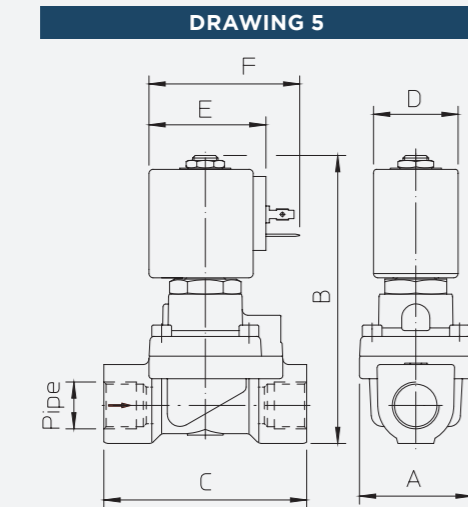


PIPE ISO 228/1	DIMENSIONS [mm]					
	A	B	C	D	E	F
G3/4	65	105	104	30	42	54
G1		112				
G1 1/4	98	125	144			
G1 1/2	118	141	172			

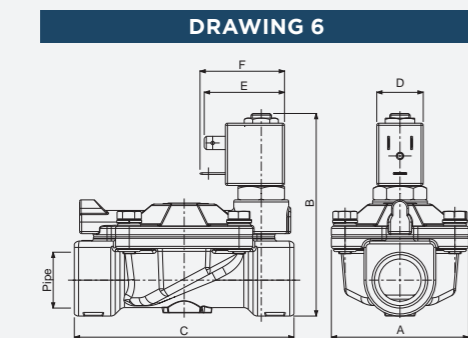
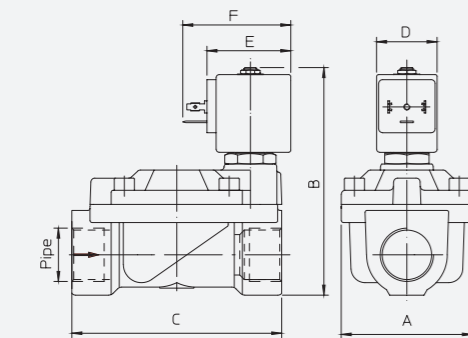
■ The fluids listed in the "technical data" tables should be considered as a recommendation. Please check the chemical compatibility of the fluids with the materials of the valve at RFQ stage.
■ Operation with gases at high differential pressure can reduce the life of the diaphragm.
■ For spare parts list please refer to the dedicated chapter.



PIPE ISO 228/1	DIMENSIONS [mm]					
	A	B	C	D	E	F
G2 1/2	168	187	226	30	42	54
G3						



PIPE ISO 228/1	DIMENSIONS [mm]					
	A	B	C	D	E	F
G1/2	40	103	73	30	42	54
G3/4	65	115	104			
G1						



PIPE ISO 228/1	DIMENSIONS [mm]					
	A	B	C	D	E	F
G3/4	65	96	104	22	28±1	39,5
G1		105				

PIPE ISO 228/1	ORIFICE SIZE Ø [mm]	Kv [l/min]	COIL SERIES	PRESSURE [bar]			CODE		DRAWING REFERENCE	
				MIN	MOPD (AIR, GASES)		PS	BRASS		STAINLESS STEEL
					AC	DC				
G3/8	13	60	L**05	0,2	12	12	25	21WA3ROB130	-	1
				B**08	0,2	16	16	25	21WA3KOB130	-
G1/2	12	35	B**08	0,1	20	20	25	-	21X2KV120	5
				L**05	0,2	12	12	25	21WA4ROB130	-
	13	70	B**08	0,2	16	16	25	21WA4KOB130	-	2
G3/4	19			130	B**08	0,1	16	16	22	-
		LB*2X	0,2			10	4	25	21W3RB190	-
		140	L**05	0,2	16	16	25	21W3RB190	-	6
				B**08	0,2	16	16	23	21W3KB190	-
G1	25	160	B**08	0,1	16	16	22	-	21X4KV250	5
				LB*2X	0,2	10	4	25	21W4RB250	-
		190	L**05	0,2	16	16	25	21W4RB250	-	6
				B**08	0,2	16	16	23	21W4KB250	-
G1 1/4	35	400	B**08	0,2	10	10	16	21W5KB350	-	3
G1 1/2	40	520	B**08	0,2	10	10	16	21W6KB400	-	3
G2	50	750	B**08	0,2	10	10	16	21W7KB500	-	3

■ For sealing different from NBR and FKM, replace the letter "B" and "V" with the ones corresponding to the other materials.
 Brass Body: V=FKM, B=NBR, E=EPDM, F=HNBR.
 Stainless Steel Body: V=FKM, E=EPDM.

PIPE ISO 228/1	ORIFICE SIZE Ø [mm]	Kv [l/min]	COIL SERIES	PRESSURE [bar]			CODE		DRAWING REFERENCE	
				MIN	MOPD (AIR, GASES)		PS	BRASS		STAINLESS STEEL
					AC	DC				
G2 1/2	65	1250	B**08	0,3	5	5	20	21W8KB650	-	4
				3	15	15	20	21W8KB650-HP	-	4
G3	75	1400	B**08	0,3	5	5	20	21W9KB750	-	4
				3	15	15	20	21W9KB750-HP	-	4

■ The valve is delivered with assembled Ø1.2 mm nozzles.
 ■ Additional undersized and oversized nozzles are supplied to adjust opening and closing times.
 ■ High flow rate versions are available only with NBR diaphragm.

PIPE ISO 228/1	ORIFICE SIZE Ø [mm]	Kv [l/min]	COIL SERIES	PRESSURE [bar]			CODE		DRAWING REFERENCE	
				MIN	MOPD (AIR, GASES)		PS	BRASS		STAINLESS STEEL
					AC	DC				
G1/2	12	35	B**08	0,5	10	10	25	-	21X2KT120	5
G3/4	19	120	B**08	0,5	10	10	22	-	21X3KT190	5
G1	25	130	B**08	0,5	10	10	22	-	21X4KT250	5

■ Steam versions are available only with PTFE diaphragm.
 ■ *For a proper functioning of the solenoid valve the minimum temperature should not be less than +60°C; in order to ensure a long diaphragm life, steam filtration is recommended.

2/2 NC

2/2 NC
HIGH FLOW RATE

2/2 NC
FOR STEAM

2/2 NO

PIPE ISO 228/1	ORIFICE SIZE Ø [mm]	Kv [l/min]	COIL SERIES	PRESSURE [bar]			CODE		DRAWING REFERENCE	
				MIN	MOPD (AIR, GASES)		BRASS	STAINLESS STEEL		
					AC	DC				PS
G3/8	13	60	L**05	0,2	12	11	20	21WA3I0B130	-	1
			B**08	0,2	16	16	25	21WA3Z0B130	-	2
G1/2	12	35	B**08	0,1	20	20	25	-	21X2Z1V120D	5
	13	70	L**05	0,2	12	11	20	21WA4I0B130	-	1
G3/4	19	140	B**08	0,2	16	16	25	21WA4Z0B130	-	2
			B**08	0,1	16	16	25	-	21X3Z1V190D	5
G1	25	160	B**08	0,2	16	16	25	21W3ZB190	-	3
			B**08	0,1	16	16	25	-	21X4Z1V250D	5
G11/4	35	400	B**08	0,2	16	16	25	21W4ZB250	-	3
			B**08	0,2	16	16	25	21W5ZB350	-	3
G11/2	40	520	B**08	0,2	10	10	16	21W6ZB400	-	3
			B**08	0,2	10	10	16	21W7ZB500	-	3

For other sealing materials, replace the letter B or V with the ones corresponding to the required material.
 Brass Body: V=FKM, B=NBR, E=EPDM, F=HNBR.
 Stainless Steel Body: V=FKM, E=EPDM.

2/2 NC
VALVES FOR
DRINKING WATER
SYSTEMS

PIPE ISO 228/1	ORIFICE SIZE Ø [mm]	Kv [l/min]	COIL SERIES	PRESSURE [bar]			CODE		DRAWING REFERENCE		
				MIN	MOPD (AIR, GASES)		BRASS	STAINLESS STEEL			
					AC	DC				PS	
G3/8	13	60	B**08	0,2	16	16	25	21WA3K1E130-T5	NSF	-	2
G1/2	13	70	B**08	0,2	16	16	25	21WA4K1E130-T5	NSF	-	2
G3/4	19	140	B**08	0,2	16	16	25	21W3K1E190-T5	NSF	-	3
G1	25	190	B**08	0,2	16	16	25	21W4K1E250-T5	NSF	-	3

Valves certified to NSF/ANSI 61-G, available with EPDM sealing.
 Available on request with minimum order quantity.

2/2 NO
VALVES FOR
DRINKING WATER
SYSTEMS

PIPE ISO 228/1	ORIFICE SIZE Ø [mm]	Kv [l/min]	COIL SERIES	PRESSURE [bar]			CODE		DRAWING REFERENCE		
				MIN	MOPD (AIR, GASES)		BRASS	STAINLESS STEEL			
					AC	DC				PS	
G3/8	13	60	B**08	0,2	16	16	23	21WA3Z1E130-T5	NSF	-	2
G1/2	13	70	B**08	0,2	16	16	23	21WA4Z1E130-T5	NSF	-	2
G3/4	19	140	B**08	0,2	16	16	23	21W3Z1E190-T5	NSF	-	3
G1	25	190	B**08	0,2	16	16	23	21W4Z1E250-T5	NSF	-	3

Valves certified to NSF/ANSI 61-G, available with EPDM sealing.
 Available on request with minimum order quantity.



- I. NUMBER OF WAYS**
2 - 2-way
- II. NUMBER OF ELEMENTS**
1 - 1 element
- III. ARMATURE TUBE MATERIAL**
Blank - std
6 - AISI 316 (optional, valid for NC versions, brass body only)
- IV. SERIES**
WA - G3/8 and G1/2, brass body
W - above G1/2, brass body
X - StSt body
- V. CONNECTIONS for WA series**
3 - G3/8
4 - G1/2
for W and X series
3 - G3/4
4 - G1
5 - G1 1/4
6 - G1 1/2
7 - G2
8 - G2 1/2
9 - G3
- VI. CORE TUBE TYPE**
K - for 2/2 NC valves, B**08 coil
Z - for 2/2 NO valves, B**08 coil
R - for 2/2 NC valves, LB*2X and L**05 coils
I - for 2/2 NO valves, L**05 coil
- VII. PHASE DISP. RING MATERIAL**
O or blank - copper
1 - gold plated copper
- VIII. SEALING MATERIAL**
V - FKM
E - EPDM
B - NBR
F - HNBR
T - PTFE*
- IX. ORIFICE Ø [mm] MULTIPLIED BY 10**
- X. OPTIONS**
PC - progressive closing
M - manual override
MR - manual override and closing speed adjustment
MM - spring over diaphragm
N - nickel plated body
HP - high pressure
OX - degreasing for industrial oxygen use
T5 - NSF/ANSI 61 certification

*available only for X series, steam version.

CODIFICATION

OPTIONS AVAILABILITY

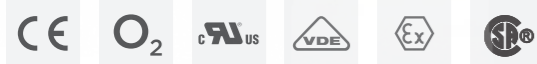
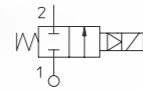
OPTION	VALVE TYPE	BODY MATERIAL	SEALING MATERIAL	COIL SERIES	VALVE SIZE/CONNECTIONS									NOTES	
					G3/8	G1/2	G3/4	G1	G1 1/4	G1 1/2	G2	G2 1/2	G3		
PC	2/2 NC	Brass	B, V, E, F	B**08	X	X	X	X							
M	2/2 NC	Brass	B, V, E, F	LB*2X	X	X									
				L**05	X	X	X	X	X	X	X				
MR	2/2 NC	Brass	B, V, E, F	B**08			X	X	X	X	X				
MM	2/2 NC	Brass	B, V, E, F	LB*2X	X	X									
				L**05											
N	2/2 NC	Brass	B, V, E, F	B**08	X	X	X	X	X	X	X				
				B**08											
HP	2/2 NC	Brass	B, V, E, F	B**08								X	X		
OX	2/2 NC, NO	Brass	V	B**08	X	X	X	X	X	X	X			PS & MOPD limited to 25 bar. Shall not be used as safety valves	
T5	2/2 NC, NO	Brass	E	B**08	X	X	X	X						Ref. to drinking water valves' section	

Please contact ODE if you wish to combine more options.

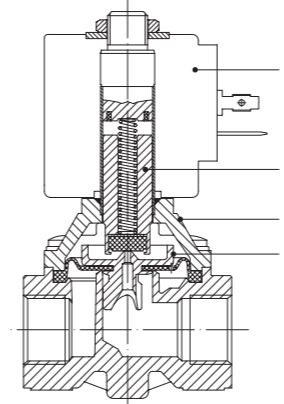
21H SERIES

General Purpose, 2-way, Indirect Acting

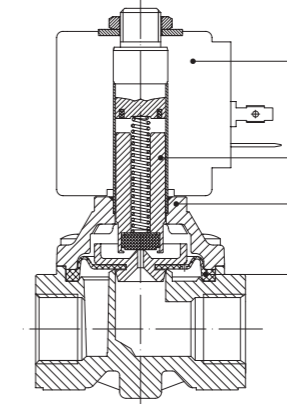
21H are indirect acting solenoid valves. The coil is positioned on the centre of the valve for maximum compactness. These valves require a minimum operating pressure of 0,1 bar. Silent closing version available. AC/DC interchangeability of the coil is possible for both NC and NO configurations.



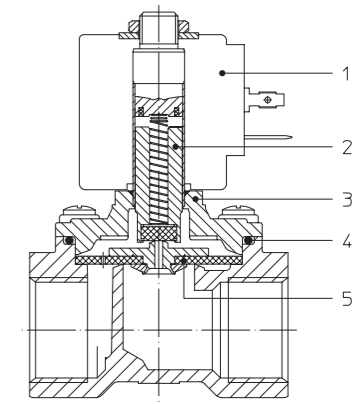
NC, G3/8 TO G1/2



NC, G3/8 TO G1/2
PROGRESSIVE CLOSING



NC, G3/4



Solenoid Valves ■ General purpose ■ 2-way ■ Indirect Acting ■ 21H SERIES

TECHNICAL DATA

PORT CONNECTION	G3/8 to G3/4		
SEALING MATERIALS	NBR	FKM	EPDM
FLUID TEMPERATURE	-10°C +90°C	-10°C +140°C	-10°C +140°C
FLUIDS	Air, inert gas, water	oils, gasoline, diesel	Water, steam
VISCOSITY	max. 12 cSt		
TUBE Ø - COIL WIDTH - SERIES	ø 13 mm - 30 mm	BDA08, BVA08 (CLASS F), BDV08 (CLASS H)	
	ø 13 mm - 36 mm	UDV16 (CLASS H)	
	ø 13 mm - 52 mm	GDV14 (CLASS H)	
INSTALLATION	as required, preferably with actuator upright		
PROTECTION DEGREE	IP65 EN 60529 (DIN 40050) with plug connector		

■ MOPD values are referred to "standard power" coil range. Please refer to coil chapter.

MATERIALS

BODY, ORIFICE	Brass UNI EN 12165 CW617N
ARMATURE TUBE	Stainless steel AISI Series 300
FIXED CORE	Stainless steel AISI Series 400
PLUNGER	Stainless steel AISI Series 400
PHASE DISPLACEMENT RING	Copper (Cu 99,9%) or gold plated copper
SPRING	Stainless steel AISI Series 300
SEALING	B=NBR, V=FKM, E=EPDM

CE

- 2014/35/EU (LVD)
- 2014/30/EU (EMC)
- 2014/68/EU (PED)
art. 4.3 up to 1"

INDUSTRIAL OXYGEN

Special versions suitable for contact with industrial oxygen are available. Please refer to codification options.

UL recognized and VDE, CSA

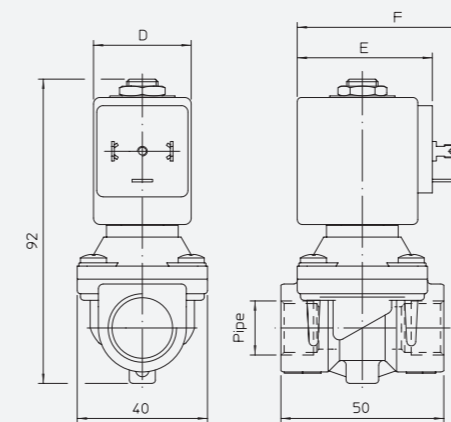
approved coils are available for this series, please refer to coil section.

EXPLOSION PROOF COILS

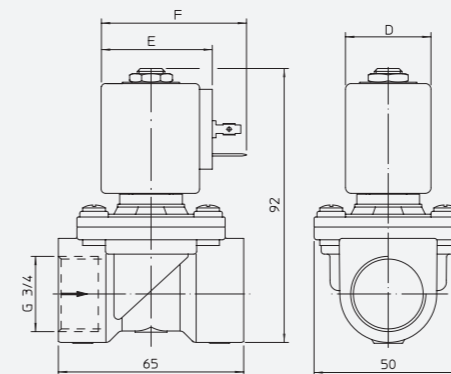
suitable for zone 2-22 are available for this series. Please refer to ATEX coil section for further details.

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DRAWING 1



DRAWING 2



COIL SERIES	DIMENSIONS [mm]		
	D	E	F
B**08	30	42	54
UDV16	36	48	60
GDV14	52	55	67

■ The fluids listed in the "technical data" tables should be considered as a recommendation. Please check the chemical compatibility of the fluids with the materials of the valve at RFQ stage.
■ Operation with gases at high differential pressure can reduce the life of the diaphragm.
■ For spare parts list please refer to the dedicated chapter.

2/2 NC

PIPE ISO 228/1	ORIFICE SIZE Ø [mm]	Kv [l/min]	COIL SERIES	PRESSURE [bar]			CODE		DRAWING REFERENCE	
				MIN	MOPD (LIQUIDS)		BRASS	STAINLESS STEEL		
					AC	DC				PS
G3/8	12	35,0	B**08	0,1	20	10	20	21H7KV120	-	1
			UDV16	0,1	20	20	20	21H7KV120	-	1
			GDV14	0,1	20	20	20	21H7KV120	-	1
G1/2	12	45,0	B**08	0,1	20	10	20	21H8KV120	-	1
			UDV16	0,1	20	20	20	21H8KV120	-	1
			GDV14	0,1	20	20	20	21H8KV120	-	1
G3/4	18	50,0	B**08	0,1	16	3	16	21H9KV180	-	2
			UDV16	0,1	16	10	16	21H9KV180	-	2
			GDV14	0,1	16	16	16	21H9KV180	-	2

For sealing different from FKM, replace the letter "V" with the ones corresponding to the other materials.
V=FKM, B = NBR, E = EPDM.

CODIFICATION

I	II	III	IV	V	VI	VII	VIII	IX
2	1	H	7	K		B	120	-

I. NUMBER OF WAYS

2 - 2-way

II. NUMBER OF ELEMENTS

1 - 1 element

III. SERIES

H - indirect acting, compact body

IV. CONNECTIONS

7 - G3/8

8 - G1/2

9 - G3/4

V. CORE TUBE TYPE

KR - for 2/2 NC valves, 8 W coil

VI. PHASE DISP. RING MATERIAL

0 or blank - copper

VII. SEALING MATERIAL

B - NBR

V - FKM

E - EPDM

VIII. ORIFICE Ø [mm] MULTIPLIED BY 10

IX. OPTIONS

PC - progressive closing

N - nickel plated body

OX - oxygen version

OPTIONS
AVAILABILITY

OPTION	VALVE TYPE	BODY MATERIAL	SEALING MATERIAL	VALVE SIZE/CONNECTIONS			NOTES
				G3/8	G1/2	G3/4	
PC	2/2 NC	Brass	B, V, E	X	X	X	
N	2/2 NC	Brass	B, V, E	X	X	X	
OX	2/2 NC	Brass	V	X	X		PS & MOPD limited to 25 bar. Shall not be used as safety valves.

Please contact ODE if you wish to combine more options.

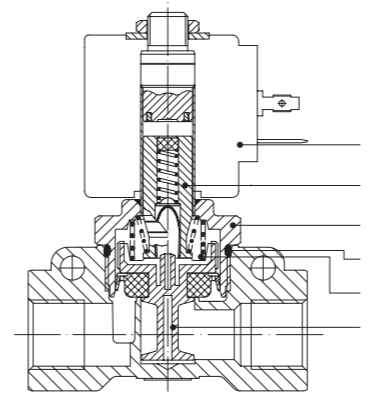
21PW - 21A-PW SERIES

General Purpose, 2-way, Indirect Acting

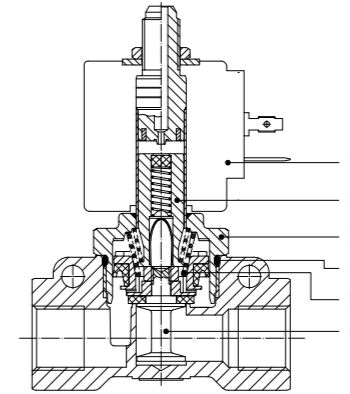
21PW - 21A-PW are indirect acting, piston solenoid valves. These valves require a minimum operating pressure of 0,3 bar. They are suitable for compressors. These solenoid valves are not suitable for stagnating fluids, or for fluids that being subject to evaporation may deposit solid, calcareous or similar residues. 2/2 NO valves are available also with 22 mm coils.



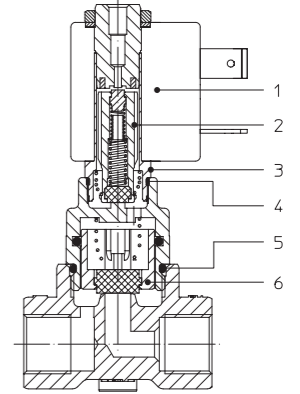
NC, FKM, G3/8 AND G1/2



NO, PTFE, G3/8 AND G1/2 (SEZIONE PER 21PW SERIES)



NO, G1/4



Solenoid Valves ■ General purpose ■ 2-way ■ Indirect Acting ■ **21PW - 21A-PW SERIES**



TECHNICAL DATA

PORT CONNECTION	G 1/4	G3/8 to G1/2
SEALING MATERIALS	soft FKM	hard hnbr PTFE
FLUID TEMPERATURE	-10°C +140°C	
FLUIDS	Air, inert gas, water	
VISCOSITY	max. 12 cSt	
TUBE Ø - COIL WIDTH - SERIES	Ø 10 mm - 22 mm	LBA05, LTA05 (class F), LBV05 (class H)
	Ø 13 mm - 30 mm	BDA08, BVA08 (class F), BDV08 (class H)
	Ø 13 mm - 30 mm	UDV16 (CLASS H)
	Ø 13 mm - 30 mm	GDV14 (CLASS H)
INSTALLATION	as required, preferably with actuator upright	
PROTECTION DEGREE	IP65 EN 60529 (DIN 40050) with plug connector	

■ MOPD values are referred to "standard power" coil range. Please refer to coil chapter.

MATERIALS

BODY, ORIFICE	Brass UNI EN 12165 CW617N
ARMATURE TUBE	Stainless steel AISI Series 300
FIXED CORE	Stainless steel AISI Series 400
PLUNGER	Stainless steel AISI Series 400
PHASE DISPLACEMENT RING	Copper (Cu 99,9%) or gold plated copper
SPRING	Stainless steel AISI Series 300
PISTON	Stainless steel AISI Series 300 + PPS (for G3/8 to G1/2)
PISTON SEAL	FKM (for G3/8 to G1/2)
SEALING	V=FKM, T=PTFE

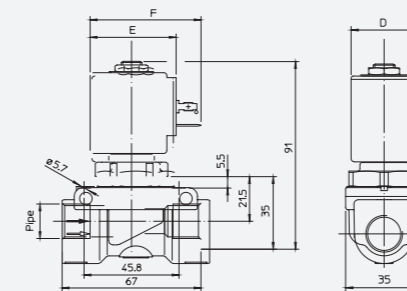
■ **CE**
- 2014/35/EU (LVD)
- 2014/30/EU (EMC)
- 2014/68/EU (PED), art. 4.3 up to 1"

■ **UL** recognized and **VDE, CSA** approved coils are available for this series, please refer to coil section.

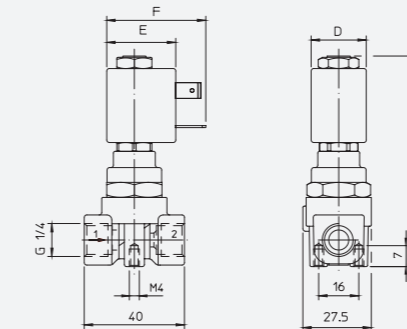
■ **EXPLOSION PROOF COILS** suitable for zone 2-22 are available for this series. Please refer to ATEX coil section for further details.

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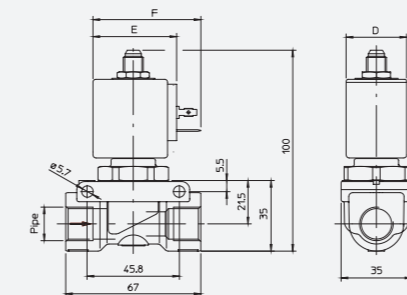
DRAWING 1



DRAWING 2



DRAWING 3



COIL SERIES	DIMENSIONS [mm]		
	D	E	F
L**05	22	28±1	39,5
B**08	30	42	54
UDV16	36	48	60
GDV14	52	55	67

■ The fluids listed in the "technical data" tables should be considered as a recommendation. Please check the chemical compatibility of the fluids with the materials of the valve at RFQ stage.
■ For spare parts list please refer to the dedicated chapter.

2/2 NC WITH FKM SEALING

PIPE ISO 228/1	ORIFICE SIZE Ø [mm]	Kv [l/min]	COIL SERIES	PRESSURE [bar]			CODE		DRAWING REFERENCE	
				MIN	MOPD		BRASS	STAINLESS STEEL		
					AC	DC				PS
G3/8	12	32	B**08	0,3	15	-	25	21PW3KOV120	-	1
			UDV16	0,3	15	-	25	21PW3KOV120	-	1
			GDV14	0,3	15	10	25	21PW3KOV120	-	1
G1/2	12	38	B**08	0,3	15	-	25	21PW4KOV120	-	1
			UDV16	0,3	15	-	25	21PW4KOV120	-	1
			GDV14	0,3	15	10	25	21PW4KOV120	-	1

2/2 NC WITH PTFE SEALING

PIPE ISO 228/1	ORIFICE SIZE Ø [mm]	Kv [l/min]	COIL SERIES	PRESSURE [bar]			CODE		DRAWING REFERENCE	
				MIN	MOPD		BRASS	STAINLESS STEEL		
					AC	DC				PS
G3/8	12	32	B**08	0,5	18	-	25	21PW3KOT120	-	1
			UDV16	0,5	20	-	25	21PW3KOT120	-	1
			GDV14	0,5	20	15	25	21PW3KOT120	-	1
G1/2	12	38	B**08	0,5	18	-	25	21PW4KOT120	-	1
			UDV16	0,5	20	-	25	21PW4KOT120	-	1
			GDV14	0,5	20	15	25	21PW4KOT120	-	1

2/2 NO WITH SOFT SEALING

PIPE ISO 228/1	ORIFICE SIZE Ø [mm]	Kv [l/min]	POWER RANGE	PRESSURE [bar]			CODE		DRAWING REFERENCE	
				MIN	MOPD		BRASS	STAINLESS STEEL		
					AC	DC				PS
G1/4	5,5	9	L**05	0,5	12	-	25	21A2W0F55-PW	-	2
					15	-	25	21A2Y0F55-PW	-	2
G 3/8	12	32	B**08	0,3	15	15	25	21PW3FOV120	-	3
G 1/4	12	38	B**08	0,3	15	15	25	21PW4FOV120	-	3

2/2 NO WITH PTFE SEALING

PIPE ISO 228/1	ORIFICE SIZE Ø [mm]	Kv [l/min]	POWER RANGE	PRESSURE [bar]			CODE		DRAWING REFERENCE	
				MIN	MOPD		BRASS	STAINLESS STEEL		
					AC	DC				PS
G 3/8	12	32	B**08	0,5	18	18	25	21PW3FOT120	-	3
G 1/4	12	38	B**08	0,5	18	18	25	21PW3FOT120	-	3

I 2	II 1	III PW	IV 3	V K	VI 0	VII V	VIII 120
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I. NUMBER OF WAYS
2 - 2 - way

II. NUMBER OF ELEMENTS
1 - 1 element

III. SERIES
PW - piston valve, up to G1/2

IV. CONNECTIONS
3 - G3/8
4 - G1/2

V. CORE TUBE TYPE
K - for 2/2 NC valves
F - for 2/2 NO valves

VI. SHADING COIL OPTIONS
0 - copper

VII. SEALING MATERIAL
V - FKM
T - PTFE

VIII. ORIFICE Ø [mm] MULTIPLIED BY 10

CODIFICATION 21PW

I 2	II 1	III A	IV 2	V Y	VI 0	VII V	VIII 120	IX -	PW
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I. NUMBER OF WAYS
2 - 2 - way

II. NUMBER OF ELEMENTS
1 - 1 element

III. SERIES
A - piston valve, up to G1/4

IV. CONNECTIONS
2 - G1/4

V. CORE TUBE TYPE
Y - for 2/2 NO 3rd way exhaust Ø1.2 mm
W - for 2/2 NO 3rd way exhaust Ø1.5 mm

VI. PHASE DISP. RING MATERIAL
0 - copper

VII. SEALING MATERIAL
F - HNBR

VIII. ORIFICE Ø [mm] MULTIPLIED BY 10

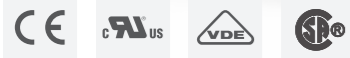
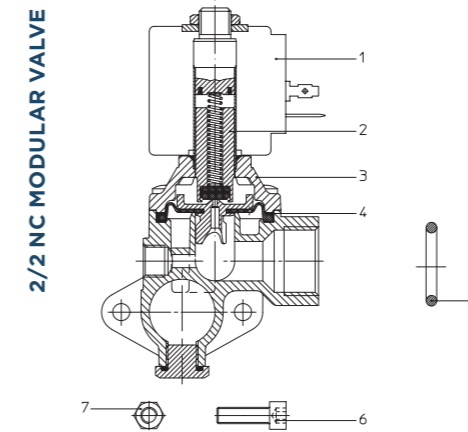
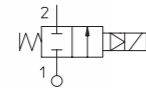
IX. VERSIONS
PW - piston type

CODIFICATION 21A-PW

4743 SERIES

General Purpose, 2-way, Indirect Acting

4743 Series is a modular indirect acting solenoid valve, especially designed for water distribution systems. It is provided with an additional G1/8 port, connected to the outlet, for mixing the main water flow with detergents. It can be sold both as single valve or preassembled manifold.



TECHNICAL DATA

PORT CONNECTION	Flange inlet - G1/2 outlet	
SEALING MATERIALS	FKM	
FLUID TEMPERATURE	-10°C +140°C	
FLUIDS	water	
VISCOSITY	max 12 cSt	
TUBE Ø - COIL WIDTH - SERIES	Ø 13 mm - 30 mm	BDA08, BVA08 (class F), BDV08 (class H)
	Ø 13 mm - 36 mm	UDV16 (CLASS H)
INSTALLATION	as required, preferably with actuator upright	
PROTECTION DEGREE	IP65 EN 60529 (DIN 40050) with plug connector	

■ MOPD values are referred to "standard power" coil range. Please refer to coil chapter.

MATERIALS

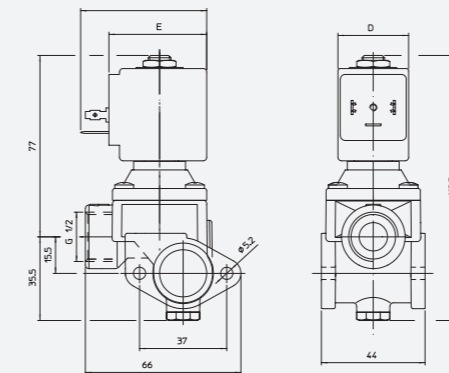
BODY, ORIFICE	Brass UNI EN 12165 CW617N
ARMATURE TUBE	Stainless steel AISI Series 300
FIXED CORE	Stainless steel AISI Series 400
PLUNGER	Stainless steel AISI Series 400
PHASE DISPLACEMENT RING	Copper (Cu 99,9%)
SPRING	Stainless steel AISI Series 300
SEALING	V=FKM

2/2 NC

PIPE	ORIFICE SIZE Ø [mm]	Kv [l/min]	COIL SERIES	PRESSURE [bar]			SINGLE UNIT CODE
				MIN	MOPD AC DC	PS	
FLANGE - G1/2	12	40	B**08	0,1	16 10	20	4743KOV120
			UDV16	0,1	- 16	20	4743KOV120

- **CE**
 - 2014/35/EU (LVD)
 - 2014/30/EU (EMC)
 - 2014/68/EU (PED), art. 4.3
- **UL** recognized and **VDE, CSA** approved coils are available for this series, please refer to coil section.

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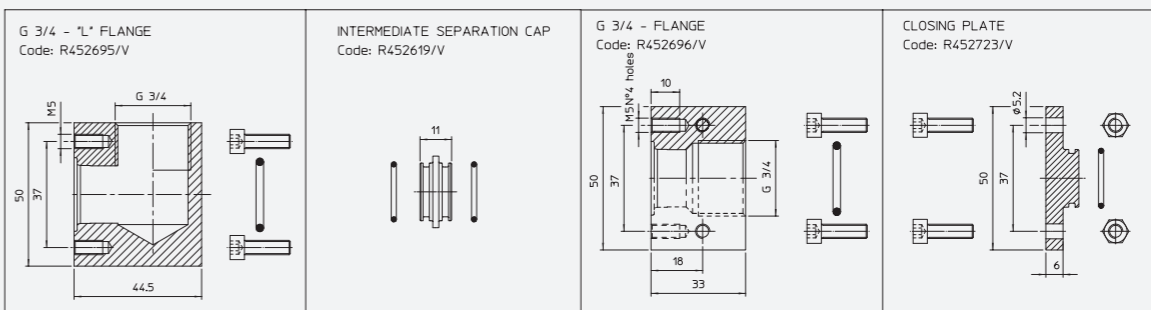


COIL SERIES	DIMENSIONS [mm]		
	D	E	F
B**08	30	42	54
UDV16	36	48	60



- I. SERIES**
- II. SEALING MATERIAL**
V - FKM
- III. NUMBER OF ELEMENTS**
- IV. LEFT INLET**
D5 - G3/4 - Flange (R452696/V)
L5 - G3/4 - "L" Flange (R452695/V)
TO - Closing plate (R452723/V)
- IV. RIGHT INLET**
D5 - G3/4 - Flange (R452696/V)
L5 - G3/4 - "L" Flange (R452695/V)
TO - Closing plate (R452723/V)
- V. MID-CAP (R452619/V)**
T1 - YES - (position after element n°1)
00 - NO

CODIFICATION

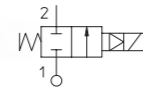


■ The fluids listed in the "technical data" tables should be considered as a recommendation. Please check the chemical compatibility of the fluids with the materials of the valve at RFQ stage.
 ■ For spare parts list please refer to the dedicated chapter.
 ■ G type thread in accordance with ISO 228/1.
 ■ Low lead brass version available on request, please contact ODE for further details.

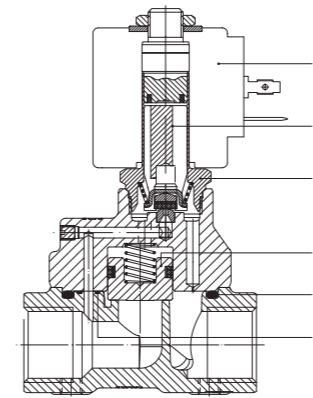
HIGH PRESSURE SERIES

General Purpose, 2-way, Indirect Acting

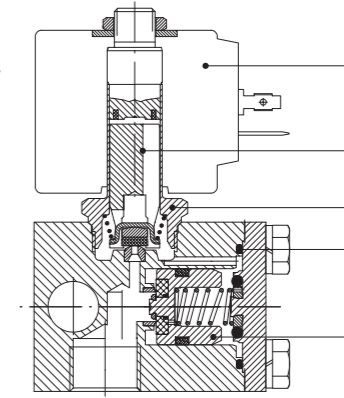
2-way, piston operated, solenoid valves for control of air, inert gas, water and other fluids compatible with the seal materials. Due to the robust piston design, the valves can handle high operating pressure with large orifices. A minimum operating pressure is required.



NC, G1/2



NC, G3/8



Solenoid Valves ■ General purpose ■ 2-way ■ Indirect Acting ■ HIGH PRESSURE SERIES

TECHNICAL DATA

PORT CONNECTION	G3/8	G1/2
SEALING MATERIALS	PTFE	Fiberglass reinforced PBT
FLUID TEMPERATURE	-40°C +98°C	-20°C +95°C
FLUIDS	air, water	air, water
VISCOSITY	max. 12 cSt	
COILS POWER RANGE - WIDTH	ø 13 mm - 30 mm	BDA08, BVA08 (class F), BDV08 (class H)
	ø 13 mm - 36 mm	UDV16 (class H)
	ø 13 mm - 52 mm	GDV14 (class H)
INSTALLATION	as required, preferably with actuator upright	
PROTECTION DEGREE	IP65 EN 60529 (DIN 40050) with plug connector	

■ MOPD values are referred to "standard power" coil range. Please refer to coil chapter.

MATERIALS

BODY	Brass UNI EN 12165 CW617N
ORIFICE	Stainless steel AISI Series 300 for G3/8 Brass UNI EN 12165 CW617N for G1/2
ARMATURE TUBE	Stainless steel AISI Series 300
FIXED CORE	Stainless steel AISI Series 400
PLUNGER	Stainless steel AISI Series 400
PHASE DISPLACEMENT RING	Copper (Cu 99,9%)
SPRING	Stainless steel AISI Series 300
SEALING	T=PTFE for G3/8 Q=PBT for G1/2

■ CE

- 2014/35/EU (LVD)
- 2014/30/EU (EMC)
- 2014/68/EU (PED), art. 4.3 up to 1"

■ UL recognized and VDE, CSA

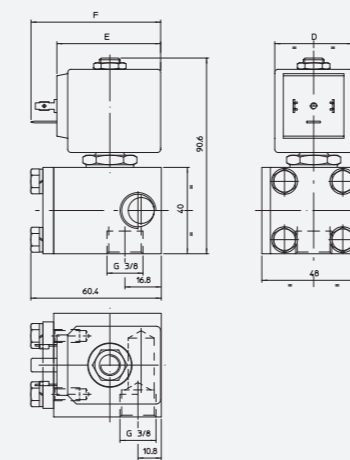
approved coils are available for this series, please refer to coil section.

■ EXPLOSION PROOF COILS

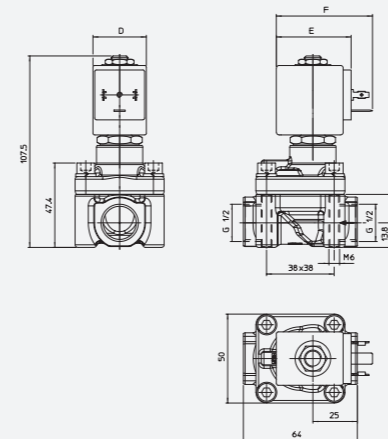
suitable for zone 2-22 are available for this series. Please refer to ATEX coil section for further details.

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DRAWING 1



DRAWING 2



COIL SERIES	DIMENSIONS [mm]		
	D	E	F
B**08	30	42	54
UDV16	36	48	60
GDV14	52	55	67

■ The fluids listed in the "technical data" tables should be considered as a recommendation. Please check the chemical compatibility of the fluids with the materials of the valve at RFQ stage.
■ For spare parts list please refer to the dedicated chapter.

2/2 NC

PIPE ISO 228/1	ORIFICE SIZE Ø [mm]	Kv [l/min]	COIL SERIES	PRESSURE [bar]			CODE		DRAWING REFERENCE	
				MIN	MOPD		BRASS	STAINLESS STEEL		
					AC	DC				PS
G3/8	2,5	14	B**08	0,7	90*	40	150	4731K0T70	-	1
			UDV16	0,7	100*	90	150	4731K0T70	-	1
			GDV14	0,7	100*	100	150	4731K0T70	-	1
G1/2	12	60	B**08	3	100	90	100	4966K0Q120	-	2
			UDV16	3	100	100	100	4966K0Q120	-	2

* MOPD values valid only for mono-frequency coil.

2/2 NO

PIPE ISO 228/1	ORIFICE SIZE Ø [mm]	Kv [L/MIN]	COIL SERIES	PRESSURE [bar]			CODE		DRAWING REFERENCE	
				MIN	MOPD		BRASS	STAINLESS STEEL		
					AC	DC				PS
G1/2	12	60	B**08	3	50	50	80	4966Z0Q120D	-	2
			UDV16	3	50	50	80	4966Z0Q120D	-	2

CODIFICATION

I	II	III	IV	V	VI
4966	K	O	Q	120	D

I. SERIES
 4731 - High pressure valve, G3/8
 4966 - High pressure valve, G1/2

II. CORE TUBE TYPE
 K - for 2/2 NC valves
 Z - for 2/2 NO valves (G1/2 only)

III. PHASE DISP. RING MATERIAL
 O - copper

IV. SEALING MATERIAL
 Q - PBT (G1/2 only)
 T - PTFE (G3/8 only)

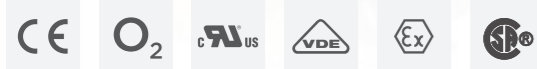
V. ORIFICE Ø [mm] MULTIPLIED BY 10

VI. COIL IDENTIFICATION
 Blank - std. for NC
 D - for NO

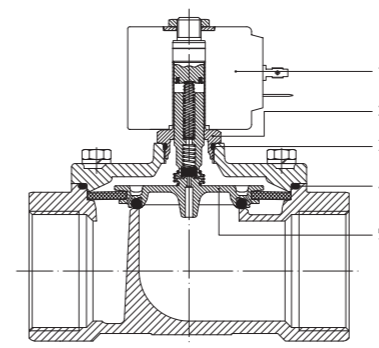
21HT-HF-IH SERIES

General Purpose, 2-way, Combined Acting

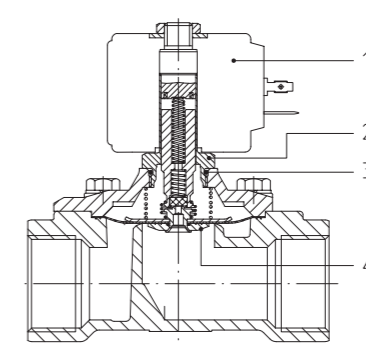
21HT, 21HF and **21IH** are combined acting solenoid valves which do not require a minimum operating pressure differential. These valves are suitable for vacuum operations. A large selection of seal materials provides wide chemical compatibility. 21HT series is provided with fiber reinforced diaphragms for optimized durability. AC/DC interchangeability of the coil is possible for both NC and NO configurations.



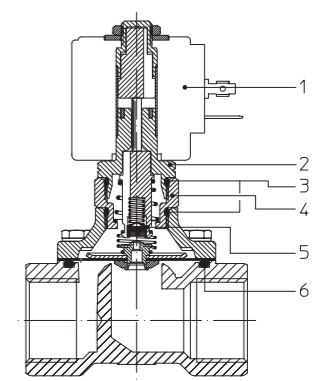
NC, BRASS, ABOVE 1"



NC, BRASS, UP TO 1"



NO BRASS



Solenoid Valves ■ General purpose ■ 2-way ■ Combined Acting ■ 21HT-21IH SERIES

TECHNICAL DATA

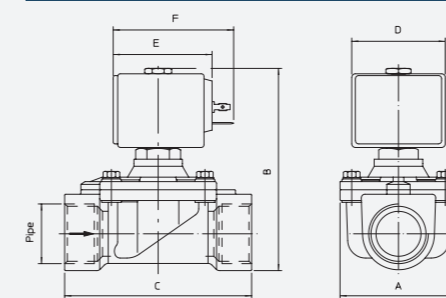
PORT CONNECTION	G 3/8 ÷ G 1 1/2				
SEALING MATERIALS	21HF Series		21HT-IH Series		
	NBR	FKM	EPDM	NBR+PA	FKM+PA
FLUID TEMPERATURE	-10°C +90°C	-10°C +140°C	-10°C +140°C	-10°C +90°C	-10°C +140°C
FLUIDS	air, inert gases, water	oils, gasoline, diesel	water, steam	air, inert gases, water	oils, gasoline, diesel
VISCOSITY	Max. 12 cSt				
TUBE Ø - COIL WIDTH - SERIES	Ø 13 mm - 30 mm		BDA08, BVA08 (class F), BDV08 (class H)		
	Ø 13 mm - 36 mm		UDV16 (class H)		
	Ø 13 mm - 52 mm		GDV14 (class H)		
INSTALLATION	as required, preferably with actuator upright				
PROTECTION DEGREE	IP65 EN 60529 (DIN 40050) with plug connector				

■ MOPD values are referred to "standard power" coil range. Please refer to coil chapter.

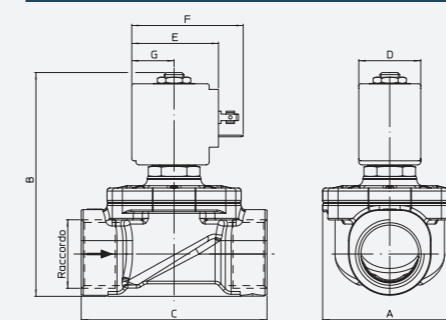
MATERIALS

BODY, ORIFICE	Brass UNI EN 12165 CW617N or stainless steel AISI 316
ARMATURE TUBE	Stainless steel AISI Series 300
FIXED CORE	Stainless steel AISI Series 400
PLUNGER	Stainless steel AISI Series 400
PHASE DISPLACEMENT RING	Copper (Cu 99,9%) or gold plated copper
SPRING	Stainless steel AISI Series 300
SEALING	B=NBR, V=FKM or FKM+PA, E=EPDM, Y=NBR+PA

DRAWING 1



DRAWING 2



PIPE ISO 228/1	DIMENSIONS [mm]		
	A	B	C
G3/8	50	89	56
G1/2		100	70
G3/4	65		112

COIL SERIES	DIMENSIONS [mm]		
	D	E	F
B**08	30	42	54
UDV16	36	48	60
GDV14	52	55	67

PIPE ISO 228/1	DIMENSIONS [mm]		
	A	B	C
G3/8	52	92	68
G3/4		100	75
G1/2	65		109
G1 1/4	94	126	128

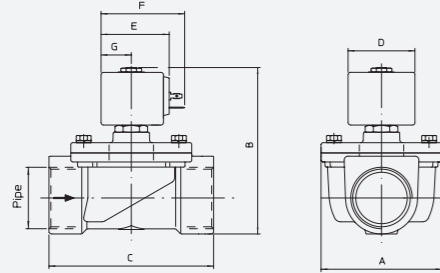
COIL SERIES	DIMENSIONS [mm]		
	D	E	F
B**08	30	42	54
UDV16	36	48	60
GDV14	52	55	67

- CE**
 - 2014/35/EU (LVD)
 - 2014/30/EU (EMC)
 - 2014/68/EU (PED)
 art. 4.3 up to 1",
 cat. I module A above 1"
- INDUSTRIAL OXYGEN**
 Special versions suitable for contact with industrial oxygen are available. Please refer to codification options.
- UL recognized and VDE, CSA**
 approved coils are available for this series, please refer to coil section.
- EXPLOSION PROOF COILS**
 suitable for zone 2-22 are available for this series. Please refer to ATEX coil section for further details.

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■ The fluids listed in the "technical data" tables should be considered as a recommendation. Please check the chemical compatibility of the fluids with the materials of the valve at RFQ stage.
 ■ Suitable for vacuum service if applied from port #2. Please contact ODE for further details.
 ■ For spare parts list please refer to the dedicated chapter.

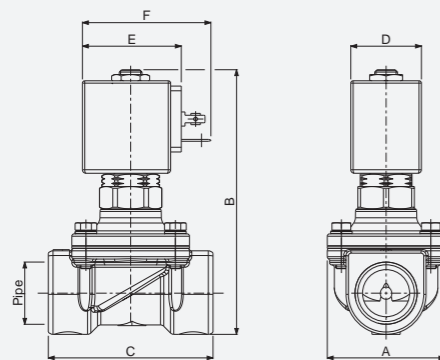
DRAWING 3



PIPE	DIMENSIONS [mm]		
ISO 228/1	A	B	C
G1/4	94	130	128
G1/2			

COIL SERIES	DIMENSIONS [mm]		
	D	E	F
B**08	30	42	54
UDV16	36	48	60
GDV14	52	55	67

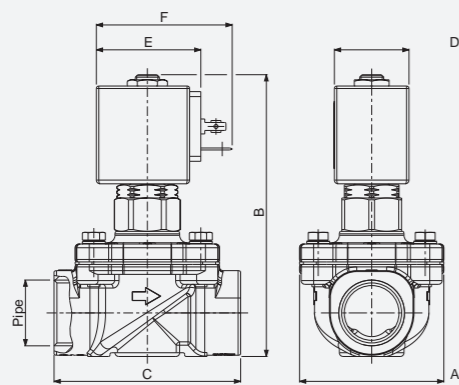
DRAWING 4



PIPE	DIMENSIONS [mm]		
ISO 228/1	A	B	C
G3/8	50	101	56
G1/2		112	70
G3/4			

COIL SERIES	DIMENSIONS [mm]		
	D	E	F
B**08	30	42	54
UDV16	36	48	60
GDV14	52	55	67

DRAWING 5



PIPE	Dimensions [mm]		
ISO 228/1	A	B	C
G3/8	52	92	68
G1/2			
G3/4			

COIL SERIES	DIMENSIONS [mm]		
	D	E	F
B**08	30	42	54
UDV16	36	48	60
GDV14	52	55	67

PIPE	ORIFICE SIZE	Kv	COIL SERIES	PRESSURE [bar]			CODE		DRAWING REFERENCE	
				MIN	MOPD		BRASS	STAINLESS STEEL		
					AC	DC				PS
G3/8	11	20	B**08	0	14	5	16	21HT3KOY110	-	1
			UDV16	0	14	14	16	21HT3KOY110	-	1
			GDV14	0	14	14	16	21HT3KOY110	-	1
	15	40	B**08	0	-	14	16	21HT3KOY110-S	-	1
			B**08	0	14	6	16	-	21H3K1V150	2
			UDV16	0	-	14	16	-	21H3K1V150	2
G1/2	16	40	B**08	0	14	2,5	16	21HT4KOY160	-	1
			UDV16	0	14	11	16	21HT4KOY160	-	1
			GDV14	0	14	14	16	21HT4KOY160	-	1
	30	50	B**08	0	-	10	16	21HT4KOY160-S	-	1
			B**08	0	14	6	16	-	21H4K1V160	2
			UDV16	0	-	14	16	-	21H4K1V160	2
G3/4	16	40	B**08	0	14	1,5	16	21HT5KOY160	-	1
			UDV16	0	14	11	16	21HT5KOY160	-	1
			GDV14	0	14	14	16	21HT5KOY160	-	1
	30	60	B**08	0	-	10	16	21HT5KOY160-S	-	1
			UDV16	0	-	14	16	21HT5KOY160-S	-	1
			B**08	0	14	6	16	-	21H5K1V200	2
G1	25	90	UDV16	0	-	14	16	-	21H5K1V200	2
			B**08	0	8	-	16	21HT6KOY250	-	1
			UDV16	0	14	1,5	16	21HT6KOY250	-	1
	140	120	GDV14	0	14	6	16	21HT6KOY250	-	1
			B**08	0	-	1	16	21HT6KOY250-S	-	1
			UDV16	0	-	6	16	21HT6KOY250-S	-	1
G1 1/4	35	300	GDV14	0	-	12	16	21HT6KOY250-S	-	1
			B**08	0	14	3	16	-	21H6K1V250	2
			UDV16	0	-	8	16	-	21H6K1V250	2
	250	270	GDV14	0	-	14	16	-	21H6K1V250	2
			B**08	0	16	-	16	21HF7KOV350	-	3
			UDV16	0	16	-	16	21HF7KOV350	-	3
G1 1/2	40	320	GDV14	0	16	6	16	21HF7KOV350	-	3
			B**08	0	8	-	16	-	21H7K1V350	2
			UDV16	0	14	-	16	-	21H7K1V350	2
	250	280	GDV14	0	-	2	16	-	21H7K1V350	2
			B**08	0	-	1	16	-	21H7K1V350-S	2
			UDV16	0	-	4	16	-	21H7K1V350-S	2
G1 1/2	40	320	GDV14	0	-	7	16	-	21H7K1V350-S	2
			B**08	0	16	-	16	21HF8KOV400	-	3
			UDV16	0	16	-	16	21HF8KOV400	-	3
	250	280	GDV14	0	16	6	16	21HF8KOV400	-	3
			B**08	0	8	-	16	-	21H8K1V400	2
			UDV16	0	14	-	16	-	21H8K1V400	2
250	320	GDV14	0	-	2	16	-	21H8K1V400	2	
		B**08	0	-	1	16	-	21H8K1V400-S	2	
		UDV16	0	-	4	16	-	21H8K1V400-S	2	
250	320	GDV14	0	-	7	16	-	21H8K1V400-S	2	

■ For sealing different from NBR+PA, FKM+PA or FKM replace the letter "Y" and "V" with the ones corresponding to the other materials.
 Y = NBR+PA, V = FKM + PA (for brass body up to 1" and for stainless steel body).
 B = NBR, V = FKM, E = EDPM (for brass body 1 1/4" and 1 1/2").

2/2 NO

PIPE ISO 228/1	ORIFICE SIZE Ø [mm]	Kv [l/min]	COIL SERIES	PRESSURE [bar]				CODE		DRAWING REFERENCE
				MIN	MOPD		PS	BRASS	STAINLESS STEEL	
					AC	DC				
G3/8	11	20	B**08	0	10	10	16	21HT3ZOY110	-	4
	15	30	B**08	0	10	10	16	-	21IH3ZIV150	5
G1/2	16	40	B**08	0	10	10	16	21HT4ZOY160	-	4
								-	21IH4ZIV160	5
G3/4	16	40	B**08	0	10	10	16	21HT5ZOY160	-	4
	20	50	B**08	0	10	10	16	-	21IH5ZIV200	5

■ For sealing different from NBR+PA or FKM+PA replace the letter "Y" and "V" with the ones corresponding to the other materials.
Y = NBR+PA, V = FKM + PA.

CODIFICATION

I	II	III	IV	V	VI	VII	VIII	IX	X
2	1		HT	3	K	O	Y	110	-

- I. NUMBER OF WAYS**
2 - 2 - way
- II. NUMBER OF ELEMENTS**
1 - 1 element
- III. ARMATURE TUBE MATERIAL**
Blank - std
6 - AISI 316 (optional, valid for NC versions, brass body only)
- IV. SERIES**
HT - G3/8 to G1, brass body
HF - above G1, brass body
IH - StSt body
- V. CONNECTIONS**
3 - G3/8
4 - G1/2
5 - G3/4
6 - G1
7 - G1 1/4
8 - G1 1/2
- VI. CORE TUBE TYPE**
K - for 2/2 NC valves
Z - for 2/2 NO valves
- VII. PHASE DISP. RING MATERIAL**
0 - copper
1 - gold plated copper
- VIII. SEALING MATERIAL for HT and IH series**
Y - NBR+PA
V - FKM+PA
for HF series
B - NBR
V - FKM
E - EPDM
- IX. ORIFICE Ø [mm] MULTIPLIED BY 1**
- X. OPTIONS**
N - nickel plated body
S - DC version
OX - degreasing for industrial oxygen use

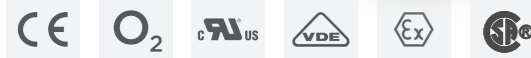
OPTIONS AVAILABILITY

OPTION	VALVE TYPE	BODY MATERIAL	SEALING MATERIAL	VALVE SIZE/CONNECTIONS						NOTES
				G3/8	G1/2	G3/4	G1	G1 1/4	G1 1/2	
N	2/2 NC	BRASS	Y, V	X	X	X	X			
S	2/2 NC	BRASS STST	Y, V Y, V	X	X	X	X		X	X
OX	2/2 NC, NO	BRASS & STST	V	X	X	X	X	X	X	PS & MOPD LIMITED TO 25 BAR. SHALL NOT BE USED AS SAFETY VALVES

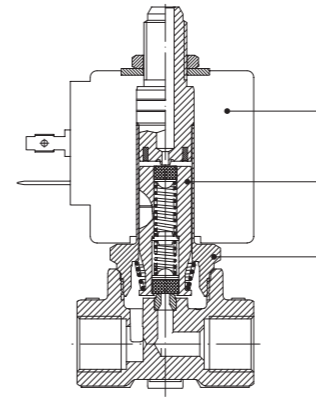
31A - 31L - 31ALB SERIES

General purpose - 3-way - Direct Acting

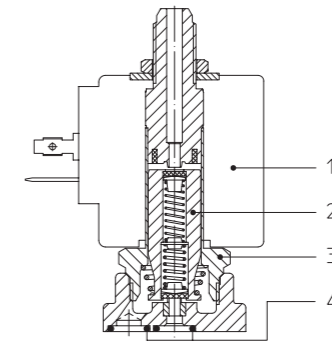
31A and **31L** are direct acting solenoid valves. The fixed core and armature tube are welded together to enhance pressure resistance and leak-tightness. Valves do not require a minimum operating pressure. A large selection of seal materials provides wide chemical compatibility. AC/DC interchangeability of the coil is possible for both NC and NO configurations.



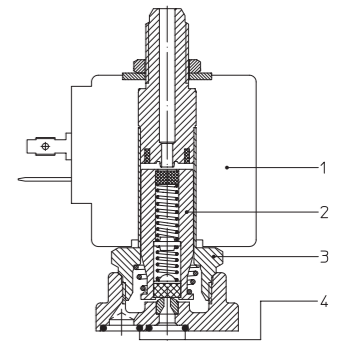
3/2 U, BRASS



3/2 NC, BRASS, RUBY



3/2 NC, BRASS, FKM



Solenoid Valves ■ General purpose ■ 3-way ■ Direct Acting ■ 31A - 31L - 31ALB SERIES

TECHNICAL DATA

PORT CONNECTION	G 1/4 + G 1/8, FLANGE CONNECTION		
SEALING MATERIALS	soft		hard
	NBR	FKM	RUBY
FLUID TEMPERATURE	-10°C +90°C	-10°C +140°C	-40°C +180°C
FLUIDS	Air, water	oils, gasoline, diesel	Steam, water, mineral oils, gas oil, fuel oils
VISCOSITY	12 cSt up to orifice 1.5 mm, 37 cSt for orifice 2.0 mm, 53 cSt for orifice 2.5 mm and above		
TUBE Ø - COIL WIDTH - SERIES	ø 13 mm - 30 mm		BDA08, BVA08 (class F), BDV08 (class H)
INSTALLATION	as required, preferably with actuator upright		
PROTECTION DEGREE	IP65 EN 60529 (DIN 40050)		

MATERIALS

BODY	Brass UNI EN 12165 CW617N or stainless steel AISI 316
ORIFICE*	Stainless steel AISI Series 300
ARMATURE TUBE	Stainless steel AISI Series 300
FIXED CORE	Stainless steel AISI Series 400
PLUNGER	Stainless steel AISI Series 400
PHASE DISPLACEMENT RING	Copper (Cu 99,9%) or gold plated copper
SPRING	Stainless steel AISI Series 300
SEALING	B=NBR, V=FKM, R=RUBY. Flange sealing are made of VMQ

* Orifice for valves with AISI 316 body is in AISI 316 material.

CE

- 2014/35/EU (LVD)
- 2014/30/EU (EMC)
- 2014/68/EU (PED)
art. 4.3 up to 1"

INDUSTRIAL OXYGEN

Special versions suitable for contact with industrial oxygen are available. Please refer to codification options.

UL recognized and VDE, CSA

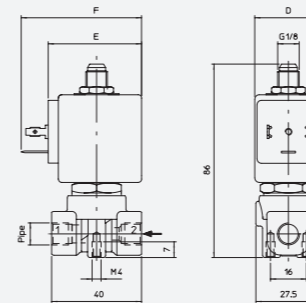
approved coils are available for this series, please refer to coil section.

EXPLOSION PROOF COILS

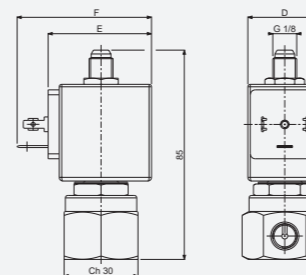
suitable for zone 2-22 are available for this series. Please refer to ATEX coil section for further details.

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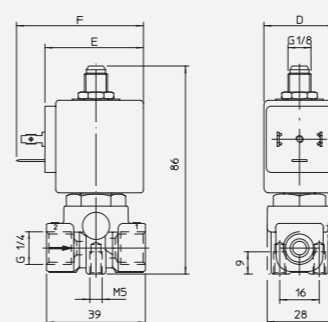
DRAWING 1



DRAWING 2

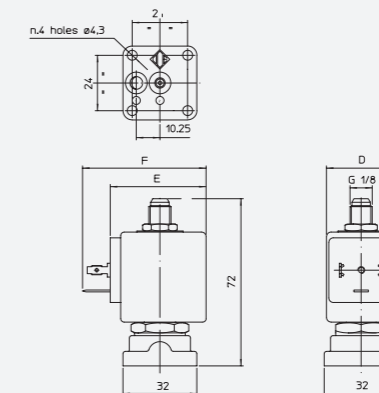


DRAWING 4



PIPE	DIMENSIONS [mm]		
	D	E	F
G1/8	30	42	54
G1/4			
FLANGE CONN.			

DRAWING 3



3/2 NC

PIPE	ORIFICE SIZE Ø [mm]	Kv [l/min]	COIL SERIES	PRESSURE [bar]			CODE		DRAWING REFERENCE		
				MIN	MOPD		BRASS	STAINLESS STEEL			
					AC	DC				PS	
G1/8	1,0	0,45	B**08	0	20	20	40	31A3AV10	-	1	
	1,5	1,4	B**08	0	15	15	40	31A3AV15	-	1	
								-	31L1A1V15	-	2
	2,0	2	B**08	0	10	10	40	31A3AV20	-	1	
								-	31L1A1V20	-	2
	2,5	3,2	B**08	0	6	6	40	31A3AV25	-	1	
G1/4	1,0	0,45	B**08	0	20	20	40	31A2AV10	-	1	
								-	31L2A1V10	-	4
	1,5	1,4	B**08	0	15	15	40	31A2AV15	-	1	
								-	31L2A1V15	-	4
	2,0	2	B**08	0	10	10	40	31A2AV20	-	1	
								-	31L2A1V20	-	4
FLANGE CONN.	1,0	0,45	B**08	0	20	20	40	31A1AV10	-	3	
	1,5	1,4	B**08	0	15	15	40	31A1AV15	31ALBA1V15	3	
	2,0	2	B**08	0	10	10	40	31A1AV20	31ALBA1V20	3	
	2,5	3,2	B**08	0	6	6	40	31A1AV25	31ALBA1V25	3	
	3,0	4	B**08	0	5	5	40	31A1AV30	31ALBA1V30	3	

- 3rd way exhaust Ø 2,5 mm for all orifice sizes.
- For sealing different from FKM, replace the letter "V" with the ones corresponding to the other materials.
Brass Body: V=FKM, B=NBR, R=RUBY
Stainless Steel Body: V=FKM
- The use of rigid sealings usually implies a slight leakage, limited within 300 cc/h of air at the pressure equal to the MOPD.

3/2 NO

PIPE	ORIFICE SIZE Ø [mm]	Kv [l/min]	COIL SERIES	PRESSURE [bar]			CODE		DRAWING REFERENCE	
				MIN	MOPD		BRASS	STAINLESS STEEL		
					AC	DC				PS
G1/8	1,5	1,4	B**08	0	15	13	40	31A3FV15-Z	-	1
	2,0	2	B**08	0	15	13	40	31A3FV20-Z	-	1
G1/4	1,5	1,4	B**08	0	15	13	40	31A2FV15-Z	-	1
	2,0	2	B**08	0	15	13	40	31A2FV20-Z	-	1
FLANGE CONN.	1,5	1,4	B**08	0	15	13	40	31A1FV15-Z	-	3
	2,0	2	B**08	0	15	13	40	31A1FV20-Z	-	3

- 3rd way exhaust Ø 1,5 mm for all orifice sizes.
- For sealing different from FKM, replace the letter "V" with the ones corresponding to the other materials.
Brass Body: V=FKM, B=NBR

3/2 U

PIPE	ORIFICE SIZE Ø [mm]	Kv [l/min]	COIL SERIES	PRESSURE [bar]			CODE		DRAWING REFERENCE	
				MIN	MOPD		BRASS	STAINLESS STEEL		
					AC	DC				PS
G1/8	1,0	0,8	B**08	0	18	18	40	31A3GV10-U	-	1
	1,5	1,4	B**08	0	10	10	40	31A3FV15-U	-	1
	2,5	3,2	B**08	0	4	4	40	31A3AV25-U	-	1
	3,0	4	B**08	0	3,5	3,5	40	31A3EV30-U	-	1
G1/4	1,0	0,8	B**08	0	18	18	40	31A2GV10-U	31L2G1V10-U	1 (BRASS), 4 (STST)
	1,5	1,4	B**08	0	10	10	40	31A2FV15-U	31L2F1V15-U	1 (BRASS), 4 (STST)
	2,5	3,2	B**08	0	4	4	40	31A2AV25-U	31L2A1V15-U	1 (BRASS), 4 (STST)
	3,0	4	B**08	0	3,5	3,5	40	31A2EV30-U	-	1
FLANGE CONN.	1,0	0,8	B**08	0	18	18	40	31A1GV10-U	-	3
	1,5	1,4	B**08	0	10	10	40	31A1FV15-U	-	3
	2,5	3,2	B**08	0	4	4	40	31A1AV25-U	-	3
	3,0	4	B**08	0	3,5	3,5	40	31A1EV30-U	-	3

- 3rd way exhaust:
31A_GV Ø 1 mm
31A_FV Ø 1,5 mm
31A_AV Ø 2,5 mm
31A_EV Ø 3 mm
- For sealing different from FKM, replace the letter "V" with the ones corresponding to the other materials.
Brass Body: V=FKM, B=NBR
Stainless Steel Body: V=FKM



- I. NUMBER OF WAYS**
3 - 3-way
- II. NUMBER OF ELEMENTS**
1 - 1 element
- III. ARMATURE TUBE MATERIAL**
Blank - std. material
6 - AISI 316 (optional, brass body only)
- IV. SERIES**
A - brass body, Ø13 mm core tube
L - StSt body, Ø13 mm core tube
AL - StSt body, flange conn., Ø13 mm core tube
- V. CONNECTIONS for A series**
1 - flange connection
3 - G1/8
2 - G1/4
- VI. CORE TUBE TYPE**
G - 3-way, B** coil, exhaust Ø 1,0 mm
F - 3-way, B** coil, exhaust Ø 1,5 mm
A - 3-way, B** coil, exhaust Ø 2,5 mm
E - 3-way, B** coil, exhaust Ø 3,0 mm
- VII. PHASE DISP. RING MATERIAL**
0 - copper
1 - gold plated copper
- VIII. SEALING MATERIAL**
V - FKM
B - NBR
R - RUBY
- IX. ORIFICE Ø [mm] MULTIPLIED BY 10**
X. OPTIONS
U - Universal version
Z - NO version
M - manual operator (screw type)
UM - Universal with manual operator
ORV - Flange O-RINGS in FKM materia (only for flanged valves)
VORV - Flange O-RINGS in FKM material and upper sealing in FKM material (only for flanged valves, with R sealing)
OX - degreasing for industrial oxygen use
N - nickel plated brass body
V - upper sealing in FKM material (only for valves with RUBY main sealing)

CODIFICATION

OPTION	BODY MATERIAL	SEALING MATERIAL	VALVE SIZE/CONNECTIONS			NOTES
			G1/8	G1/4	FLANGE CONN.	
U	Brass	V, B	X	X	X	Ref. to 3/2 U table for performances
Z	Brass	V, B	X	X	X	Ref. to 3/2 NO table for performances
M	Brass & StSt	V, B	X	X		
UM	Brass	V, B	X	X	X	Ref. to 3/2 U table for performances
ORV	Brass & StSt	V, R			X	
VORV	Brass & StSt	V, R			X	
OX	Brass & StSt	V	X	X		PS & MOPD limited to 25 bar. Shall not be used as safety valves
N	Brass	V, B, R	X	X	X	
V	Brass & StSt	R	X	X	X	

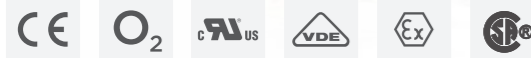
OPTIONS AVAILABILITY

Please contact ODE if you wish to combine more options.

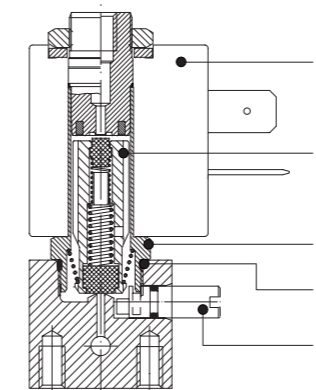
31JN - 31JL SERIES

General purpose - 3-way - Direct Acting

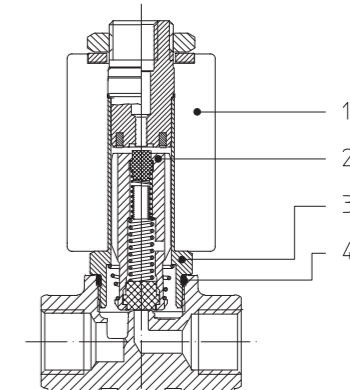
31JN - 31JL Series are compact 3-way direct acting valves with 10 mm armature tube. Thanks to a wide range of flow and pressure ratings these valves can be suitable for several applications. The armature tube is made of stainless steel to ensure greater strength and durability to the valve. Available on request the version with screw manual operator.



3/2 NC BRASS WITH MANUAL OPERATOR



3/2 NC BRASS



TECHNICAL DATA

PORT CONNECTION	G1/8, M5, subbase	
SEALING MATERIALS	NBR	FKM
FLUID TEMPERATURE	-10°C +90°C	-10°C +140°C
FLUIDS	Air, inert gas, water	
VISCOSITY	12 cSt up to orifice 1.5 mm, 37 cSt for orifice 2.0 mm and above	
TUBE Ø - COIL WIDTH - SERIES	ø 10 mm - 22 mm	LBA05, LVA05 (class F), LBV05 (class H)
INSTALLATION	as required, preferably with actuator upright	
PROTECTION DEGREE	IP65 EN 60529 (DIN 40050) with plug connector	

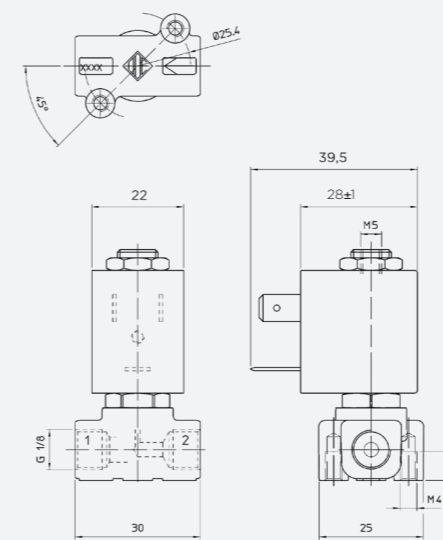
MATERIALS

BODY, ORIFICE	Brass UNI EN 12165 CW617N or AISI 316
ARMATURE TUBE	Stainless steel AISI Series 300
FIXED CORE	Stainless steel AISI Series 400
PLUNGER	Stainless steel AISI Series 400
PHASE DISPLACEMENT RING	Copper (Cu 99,9%) or gold plated copper
SPRING	Stainless steel AISI Series 300
SEALING	B=NBR, V=FKM

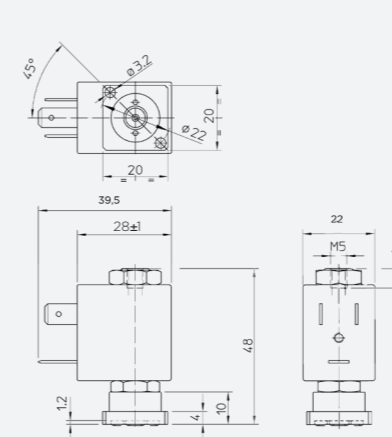
- CE**
 - 2014/35/EU (LVD)
 - 2014/30/EU (EMC)
 - 2014/68/EU (PED)
 art. 4.3 up to 1"
- INDUSTRIAL OXYGEN**
 Special versions suitable for contact with industrial oxygen are available. Please refer to codification options.
- UL recognized and VDE, CSA**
 approved coils are available for this series, please refer to coil section.
- EXPLOSION PROOF COILS**
 suitable for zone 2-22 are available for this series. Please refer to ATEX coil section for further details.

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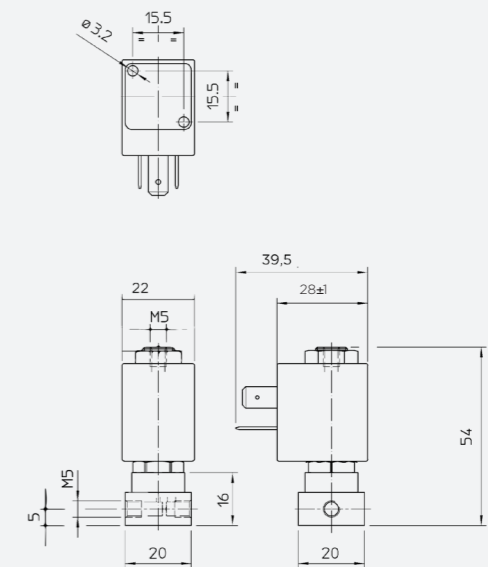
DRAWING 1



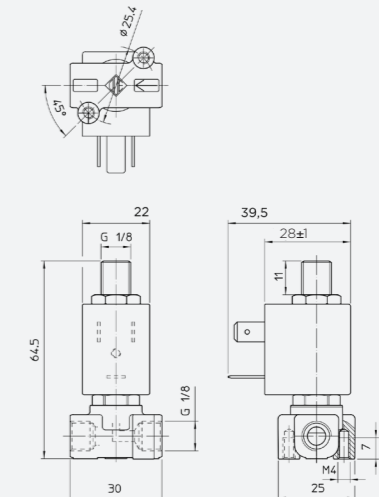
DRAWING 3



DRAWING 2

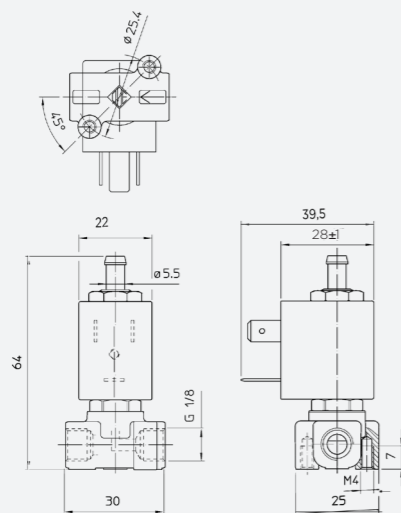


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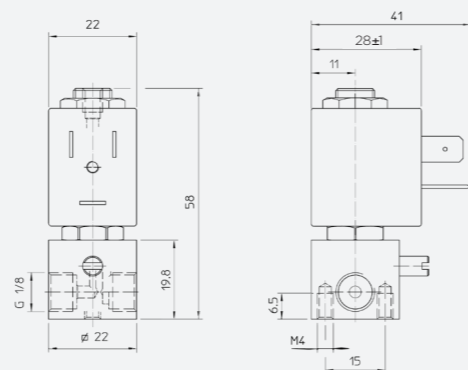


■ The fluids listed in the "technical data" tables should be considered as a recommendation. Please check the chemical compatibility of the fluids with the materials of the valve at RFQ stage.
 ■ G type thread in accordance with ISO 228/1. M5 thread in accordance with ISO 261.
 ■ For spare parts list please refer to the dedicated chapter.

DRAWING 5



DRAWING 6



3/2 NC M5 EXHAUST

PIPE	ORIFICE SIZE Ø [mm]	Kv [l/min]	COIL SERIES	PRESSURE [bar]			CODE		DRAWING REFERENCE	
				MIN	MOPD		BRASS	STAINLESS STEEL		
					AC	DC				PS
G1/8	1,2	0,65	L**05	0	15	15	40	31JN1W0V12	-	1
	1,5	1	L**05	0	10	10	40	31JN1W0V15	-	1
	2	1,7	L**05	0	8	8	40	31JN1W0V20	-	1
	2,3	2,4	L**05	0	5	5	40	31JN1W0V23	-	1
M5	1,2	0,65	L**05	0	15	15	40	31JBMW0V12	-	2
Subbase	1,2	0,65	L**05	0	15	15	40	31JKBW0V12	-	3
	2,3	2,4	L**05	0	5	5	40	31JKBW0V23	-	3

■ 3rd way exhaust Ø 1,5 mm for all orifice sizes.

**3/2 NC
G1/8 EXHAUST**

PIPE	ORIFICE SIZE Ø [mm]	Kv [l/min]	COIL SERIES	PRESSURE [bar]			CODE		DRAWING REFERENCE	
				MIN	MOPD		BRASS	STAINLESS STEEL		
					AC	DC				PS
G1/8	1,2	0,65	L**05	0	15	-	40	31JN1X0V12	-	4
		0,6	L**05	0	15	15	40	31JN1X0V12-S	-	4
	2,3	2,4	L**05	0	5	-	40	31JN1X0V23	-	4
		1,9	L**05	0	-	5	40	31JN1X0V23-S	-	4

■ 3rd way exhaust Ø 1,7 mm for all orifice sizes.

**3/2 NC
HOSE CONNECTION
EXHAUST**

PIPE	ORIFICE SIZE Ø [mm]	Kv [l/min]	COIL SERIES	PRESSURE [bar]			CODE		DRAWING REFERENCE	
				MIN	MOPD		BRASS	STAINLESS STEEL		
					AC	DC				PS
G1/8	1,2	0,65	L**05	0	15	-	40	31JN1XPV12	31JL1XPV12	5
		0,6	L**05	0	15	15	40	31JN1XPV12-S	31JL1XPV12-S	5
	2	1,7	L**05	0	8	-	40	31JN1XPV20	-	5
		1,4	L**05	0	-	8	40	-	31JL1XPV20-S	5
	2,3	2,4	L**05	0	5	-	40	31JN1XPV23	-	5
		1,9	L**05	0	5	5	40	31JN1XPV23-S	-	5

■ 3rd way exhaust Ø 1,7 mm for all orifice sizes.

PIPE	ORIFICE SIZE Ø [mm]	Kv [l/min]	COIL SERIES	PRESSURE [bar]			CODE		DRAWING REFERENCE	
				MIN	MOPD		BRASS	STAINLESS STEEL		
					AC	DC				PS
G1/8	1,2	0,6	L**05	0	15	15	40	31JR1W0V12-M	-	6
	1,5	1	L**05	0	10	10	40	31JR1W0V15-M	-	6
	2,5	1,78	L**05	0	5	5	40	31JR1W0V25-M	-	6

■ 3rd way exhaust Ø 1,5 mm for all orifice sizes

PIPE	ORIFICE SIZE Ø [mm]	Kv [l/min]	COIL SERIES	PRESSURE [bar]			CODE		DRAWING REFERENCE	
				MIN	MOPD		BRASS	STAINLESS STEEL		
					AC	DC				PS
G1/8	1,2	0,65	L**05	0	15	15	40	31JN1Y0V12-Z	-	1

■ 3rd way exhaust Ø 1,2 mm for all orifice sizes

PIPE	ORIFICE SIZE Ø [mm]	Kv [l/min]	COIL SERIES	PRESSURE [bar]			CODE		DRAWING REFERENCE	
				MIN	MOPD		BRASS	STAINLESS STEEL		
					AC	DC				PS
G1/8	1,2	0,75	L**05	0	10	7	40	31JRIY0V12-ZM	-	6
	1,5	0,75	L**05	0	6,5	6,5	40	31JRIW0V15-ZM	-	6

■ 3rd way exhaust Ø 1,2 mm for valve 31JRIY0V12-ZM.
■ 3rd way exhaust Ø 1,5 mm for valve 31JRIW0V15-ZM.

PIPE	ORIFICE SIZE Ø [mm]	Kv [l/min]	COIL SERIES	PRESSURE [bar]			CODE		DRAWING REFERENCE	
				MIN	MOPD		BRASS	STAINLESS STEEL		
					AC	DC				PS
G1/8	1,2	0,65	L**05	0	6	6	40	31JN1W0V12-U	-	1
	2,3	2,4	L**05	0	2	1	40	31JN1W0V23-U	-	1
M5	1,2	0,65	L**05	0	6	6	40	31JBMW0V12-U	-	2

■ 3rd way exhaust Ø 1,5 mm for all orifice sizes.

I	II	III	IV	V	VI	VII	VIII	IX
3	1		JN1	W	O	V	12	-

I. NUMBER OF WAYS

3 - 2-way

II. NUMBER OF ELEMENTS

1 - 1 element

III. ARMATURE TUBE MATERIAL

Blank - std. material
6 - AISI 316 (optional, valid for NC versions, brass body only)

IV. SERIES AND CONNECTIONS

JN1 - brass body G1/8 (F)
JR1 - square brass body G1/8 (F)
JL1 - StSt body G1/8 (F)
JBM - brass body M5 (F)
JKB - brass body subbase

V. CORE TUBE TYPE

W - for 3/2 valve, M5 (F), exhaust Ø 1,5 mm
X - for 3/2 valve, G1/8 (M), exhaust Ø 1,7 mm
XP - for 3/2 valve, hose connection, exhaust Ø 1,7 mm
Y - for 3/2 valve, M5 (F), exhaust Ø 1,2 mm

VI. PHASE DISP. RING MATERIAL

0 - copper
1 - gold plated copper

VII. SEALING MATERIAL

V - FKM
B - NBR

VIII. ORIFICE Ø [mm] MULTIPLIED BY 10

IX. OPTIONS
M - manual operator, screw type
OX - degreasing for industrial oxygen use
Z - normally open
U - universal
ZM - normally open with manual operator, screw type

OPTION	VALVE TYPE	BODY MATERIAL	SEALING MATERIAL	VALVE SIZE/CONNECTIONS			NOTES
				G1/8	M5	SUBBASE	
M	3/2 NC	Brass	B, V	X			Only for JR series
OX	3/2 NC, NO, U	Brass, StSt	V	X	X	X	PS & MOPD limited to 25 bar. Shall not be used as safety valves
Z	3/2 NO	Brass	B, V	X			Ref. to 3/2 NO table for performances
U	3/2 U	Brass	B, V	X	X		Ref. to 3/2 U table for performances
ZM	3/2 NO	Brass	B, V	X			Only for JR series. Ref. to 3/2 NO table for performances

■ For sealing different from FKM, replace the letter "V" with the ones corresponding to the other materials.
Brass Body: V=FKM, B=NBR
Stainless Steel Body: V=FKM
■ Please contact ODE if you wish to combine more options.

**3/2 NC
M5 EXHAUST
MANUAL
OPERATOR**

**3/2 NO
M5 EXHAUST**

**3/2 NO
M5 EXHAUST
MANUAL
OPERATOR**

**3/2 U
M5 EXHAUST**

CODIFICATION

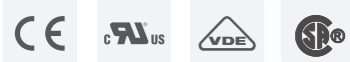
**OPTIONS
AVAILABILITY**

■ For sealing different from FKM, replace the letter "V" with the ones corresponding to the other materials.
Brass Body: V=FKM, B=NBR
Stainless Steel Body: V=FKM

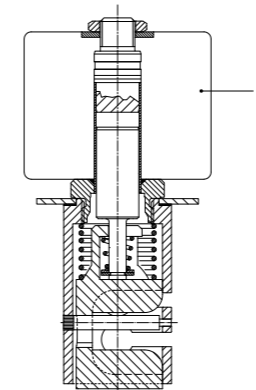
31Z SERIES

General purpose - 3-way - Direct Acting

31Z Series are NC and NO pinch valves designed for use in a variety of analytical, medical and industrial applications. These valves are suitable for use with highly aggressive or uncontaminable fluids thanks to the hermetic separation of the mechanical parts and the fluid.



3/2 - NC - NO



TECHNICAL DATA

TUBING SIZE	9 mm	
RECOMMENDED TUBING MATERIAL	VMQ	
RECOMMENDED TUBING HARDNESS	55 ± 3 ShA	
FLUIDS	Liquid, gases	
TUBE Ø - COIL WIDTH - SERIES	Ø 13 mm - 52 mm	GDV14 (class H)
INSTALLATION	As required, preferably with actuator upright	
PROTECTION DEGREE	IP65 EN 60529 (DIN 40050) with plug connector	

▪ MOPD values are referred to "standard power" coil range. Please refer to coil chapter.

MATERIALS

BODY	Anodized Aluminum
ARMATURE TUBE	Stainless steel AISI series 300 + Brass - UNI EN 12165 CW617N
FIXED CORE	Stainless steel AISI Series 400
PLUNGER	Stainless steel AISI Series 400
SPRING	Stainless steel AISI Series 300
PINCHING DEVICE	POM

3/2 NC - NO

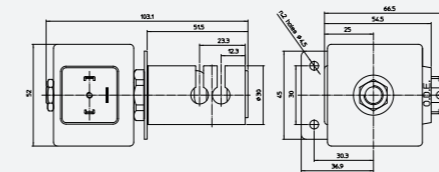
TUBING OD	TUBING ID	MINIMUM THICKNESS	COIL SERIES	PINCHING FORCE	CODE	DRAWING REFERENCE
Ø [mm]	Ø [mm]	[mm]		[kgf]		
9	6,4	1,3	GDV14	1,25	31Z30G3S95	1

▪ Other sizing available on request. Please contact ODE.

▪ **CE**
- 2014/35/EU (LVD)
- 2014/30/EU (EMC)

▪ **UL** recognized and **VDE, CSA**
approved coils are available for this series, please refer to coil section.

DRAWING 1



I	II	III	IV	V	VI	VII	VIII
3	1	Z	30	G	3	S	95
I. NUMBER OF WAYS 3 - 3-way	II. NUMBER OF ELEMENTS 1 - 1 element	III. SERIES Z - pinch valves	IV. BODY DIAMETER [mm] 30	V. COIL TYPE G - GDV, GDH Series	VI. VALVE TYPE 3 - 3/2 NC - NO	VII. TUBING MATERIAL S - VMQ	VIII. TUBING SIZE CODE 95

CODIFICATION

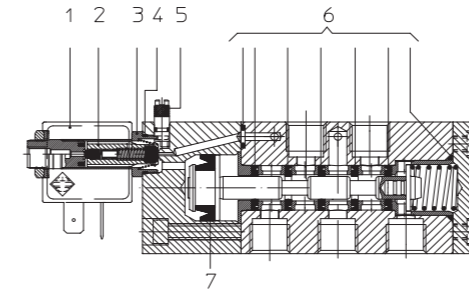
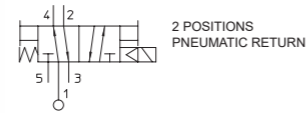
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▪ Chemical compatibility between fluid and tubing material shall be assessed with tubing manufacturer.
▪ MOPD is for reference only. Please contact tubing manufacturers for maximum working pressure and temperature.

51 SERIES

General Purpose, 5-way, Indirect Acting

The **51 series** are 5/2, solenoid operated, spool valves available with threaded port connections and NAMUR interface. Specific surface treatments and proven construction ensure protection against environmental corrosion and product reliability. A minimum operating pressure of 0.7 bar is required.



Solenoid Valves ■ General purpose ■ 5-way ■ Indirect Acting ■ **51 SERIES**

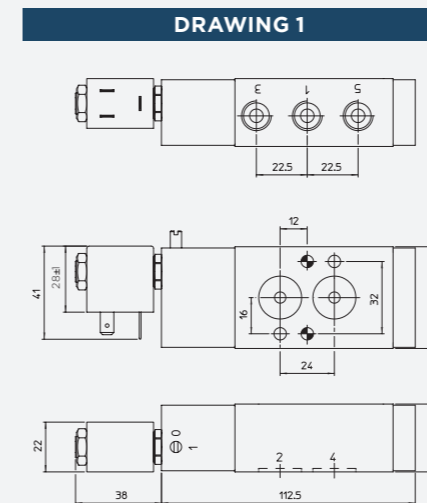
TECHNICAL DATA

PORT CONNECTION	G 1/4	
SEALING MATERIALS	NBR	
FLUID TEMPERATURE	-10°C +90°C	
FLUIDS	Lubricated air	
VISCOSITY	-	
TUBE Ø - COIL WIDTH - SERIES	ø 10 mm - 22 mm	LBA05, LVA05 (class F), LBV05 (class H)
INSTALLATION	as required, preferably with actuator upright	
PROTECTION DEGREE	IP65 EN 60529 (DIN 40050) with plug connector	

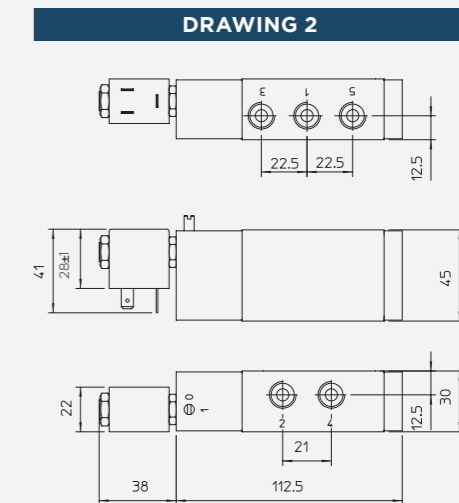
MATERIALS

BODY, ORIFICE	Anodized aluminum	
ARMATURE TUBE	Stainless steel AISI Series 300	
FIXED CORE	Stainless steel AISI Series 400	
PLUNGER	Stainless steel AISI Series 400	
PHASE DISPLACEMENT RING	Copper (Cu 99,9%) or gold plated copper	
SPRING	Stainless steel AISI Series 300	
SEALING	B=NBR	

DRAWING 1



DRAWING 2



PIPE ISO 228/1	ORIFICE SIZE Ø [mm]	Kv [l/min]	POWER RANGE	MIN	PRESSURE [bar]			CODE ALUMINUM	DRAWING REFERENCE
					MOPD		PS		
					AC	DC			
G1/4 AND NAMUR INTERFACE	6	6,5	5	1,3	10	10	10	512946WOB12-A	1
G1/4	6	6,5	5	1,3	10	10	10	515620WOB12-2	2

5/2 NO

- **CE**
- 2014/35/EU (LVD)
- 2014/30/EU (EMC)
- 2014/68/EU (PED), art. 4.3
- **UL** recognized and **VDE, CSA** approved coils are available for this series, please refer to coil section.
- **EXPLOSION PROOF COILS** suitable for zone 2-22 are available for this series. Please refer to ATEX coil section for further details.

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▪ The fluids listed in the "technical data" tables should be considered as a recommendation. Please check the chemical compatibility of the fluids with the materials of the valve at RFQ stage.
▪ For spare parts list please refer to the dedicated chapter.

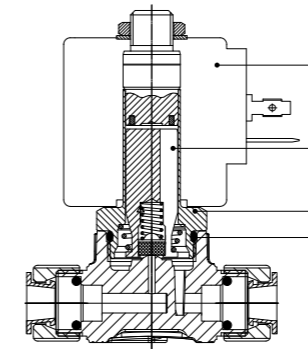
21A-21L-21ALB-21AP SERIES

Food Grade NSF, 2-way, Direct Acting

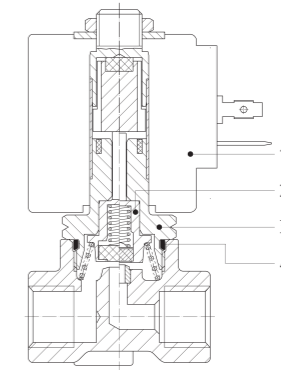
21A, 21L and **21AP** are direct acting solenoid valves. The fixed core and armature tube are welded together to enhance pressure resistance and leak-tightness. Valves do not require a minimum operating pressure. AC/DC interchangeability of the coil is possible for both NC and NO configurations.



2/2 NC



2/2 NO



Solenoid Valves ■ Food Grade NSF ■ 2-way ■ Direct Acting ■ 21A 21L 21 ALB 21APSERIES



TECHNICAL DATA

PORT CONNECTION	G1/8, G1/4, Flange connection, PUSH-IN for OD 4, 6, 8 mm		
SEALING MATERIALS	FKM	EPDM*	RUBY
FLUID TEMPERATURE	-10°C +140°C	-10°C +140°C	-40°C +180°C
FLUIDS	Water, steam, air	Water, steam	Water, steam
VISCOSITY	12 cSt up to orifice 1.5 mm, 37 cSt for orifice 2.0 mm, 53 cSt for orifice 2.5 mm and above		
TUBE Ø - COIL WIDTH - SERIES	ø 13 mm - 30 mm		BDV08 (CLASS H)
	ø 13 mm - 36 mm		UDV16 (CLASS H)
	ø 13 mm - 52 mm		GDV14 (CLASS H)
INSTALLATION	As required, preferably with actuator upright		
PROTECTION DEGREE	IP 65 EN 60529 (DIN 40050) with connector		

- * Available on request with minimum order quantity.
- MOPD values are referred to "standard power" coil range. Please refer to coil chapter.

MATERIALS

BODY	Low lead brass, stainless steel AISI 316 or PPS
ORIFICE	For Brass body: ≤ 3 mm Stainless steel AISI series 300, > 3 mm Low lead brass For AISI 316 body: AISI 316 For PPS body: PPS for FKM sealing, Stainless Steel for RUBY sealing
ARMATURE TUBE	Stainless steel AISI series 300
FIXED CORE	Stainless steel AISI series 400
PLUNGER	Stainless steel AISI series 400
PHASE DISPLACEMENT RING	Copper (Cu 99,9%) or Gold plated copper
SPRING	Stainless steel AISI series 300
SEALING*	V=FKM, E=EPDM, R=RUBY O-R flange sealing are made of VMQ

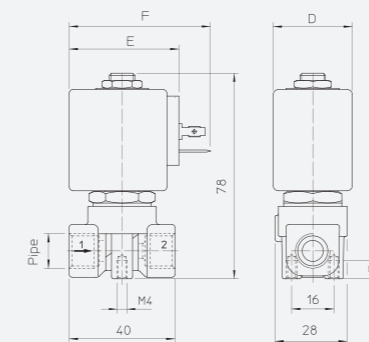
- * V = FKM+EPDM for valves with PPS body and PUSH IN connections.

- **CE**
- 2014/35/EU (LVD)
- 2014/30/EU (EMC)
- 2014/68/EU (PED)
art. 4.3 up to 1"
- **UL** recognized and **VDE, CSA**
approved coils are available for this series, please refer to coil section.
- **NSF/ANSI 169** certification (Special Food Equipment and Devices) is available for this series. Valves with NSF approval are in compliance with CE regulation 1935/2004.

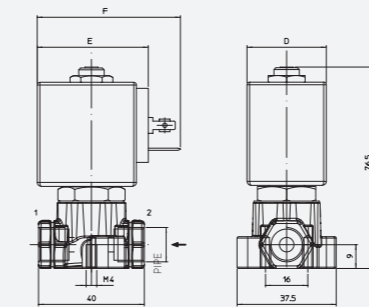
- The fluids listed in the "technical data" tables should be considered as a recommendation. Please check the chemical compatibility of the fluids with the materials of the valve at RFQ stage.
- G type thread in accordance with ISO 228/1.
- For spare parts list please refer to the dedicated chapter.

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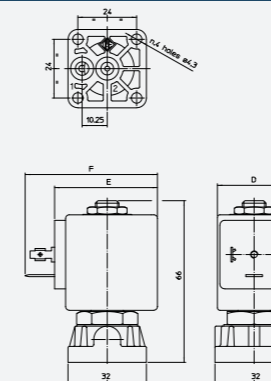
DRAWING 1



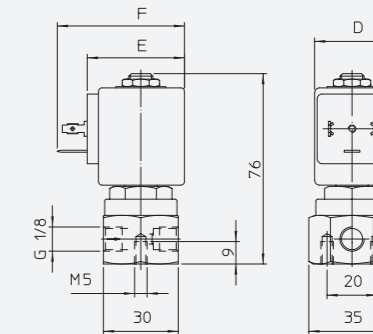
DRAWING 3



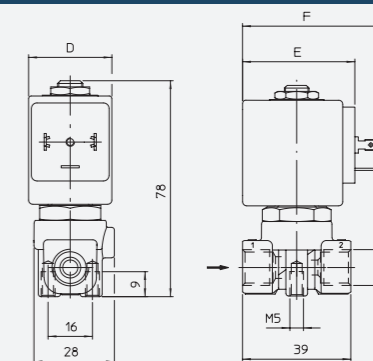
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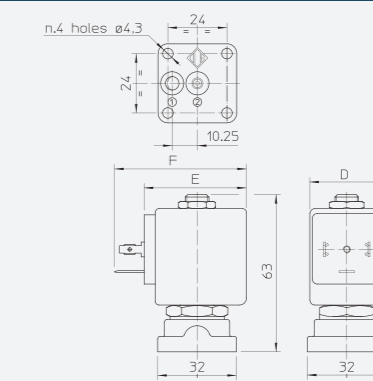
DRAWING 2



DRAWING 4



DRAWING 6



2/2 NO WITH FKM SEALING

PIPE	ORIFICE SIZE [mm]	Kv [l/min]	COIL SERIES	PRESSURE [bar]			CODE			DRAWING REF.		
				MIN.	MOPD		BRASS	STAINLESS STEEL	PPS			
					AC	DC					PS	
G1/8	1,5	1,1	B**08	0	16	16	25*	-	-	21AP1ZIV15D-T0	3	
			UDV16	0	25	25	40	21A3IZIV15D-T3	-	-	-	1
G1/4	2	1,8	B**08	0	20	20	25*	-	-	21AP2ZIV20D-T0	3	
			UDV16	0	20	20	40	21A22ZIV20D-T3	-	-	-	1
	3	3,4	B**08	0	10	10	25*	-	-	21AP2ZIV30D-T0	3	
			UDV16	0	15	15	25*	-	-	21AP2ZIV30G-T0	3	
	4,5	6,5	B**08	0	4	4	40	21A22ZIV45D-T3	-	-	-	1
			GDV14	0	3,5	3,5	40	21A22ZIV55G-T3	-	-	-	1
FLANGE CONN.	1,5	1,4	B**08	0	25	25	40	21A1BZIV15D-T3	-	-	6	

- *Max allowable pressure (PS) 16 bar for domestic applications. Safety factor equal to 5*PS according to EN 60730-2-8.
- **Max allowable pressure (PS) 25 bar for industrial applications.
- For AP series: Coil nut assembly 2 Nm max, armature tube 4 Nm.
- For tubes: PA and PTFE tolerance max (±0,1).
- Valves with PPS body may require a MOQ, depending on orifice size and connections. Please contact ODE before order.

I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
2	1		A	31	K	1	V	30		-	T3

- I. NUMBER OF WAYS**
2 - 2 - way
- II. NUMBER OF ELEMENTS**
1 - 1 element
- III. ARMATURE TUBE MATERIAL**
Blank - std. material
6 - AISI 316 (optional, valid for NC versions, brass or PPS body only)
- IV. SERIES TYPE**
A - brass body
L - StSt body
AL - StSt body with flange connection
AP - PPS body
- V. CONNECTIONS**
For A series*
31 - G1/8
22 - G1/4
For L series*
11 - G1/8
22 - G1/4
- VI. CORE TUBE TYPE**
K - for 2/2 NC valves
Z - for 2/2 NO valves
- VII. PHASE DISP. RING MATERIAL**
0 or blank - copper
1 - gold plated copper
- VIII. SEALING MATERIAL**
V - FKM
R - RUBY
E - EPDM
- IX. ORIFICE Ø MULTIPLIED BY 10**
- X. COIL IDENTIFICATION**
Blank - std. for NC
D - B**08 coil, only for 2/2 NO valves
G - UDV16 and GDV14 coils, only for 2/2 NO valves
- XI. OPTIONS**
W - variable pitch spring or double spring, improved pressure range
RP - StSt orifice
- XII. NSF CERTIFICATION**
For A series
T3 - Low lead brass body
For L, AL series
T4 - StSt body
For AP series
T0 - PPS body

*Push in connections can be made with additional fittings. Please contact ODE for further informations.

OPTION	VALVE TYPE	BODY MATERIAL	SEALING MATERIAL	VALVE SIZE/CONNECTIONS				NOTES
				G1/8	G1/4	FLANGE CONN.	PUSH IN	
W	NC	Brass & StSt	V	X	X	X	X	Ref. to improved pressure range valves' table for performances
RP	NC, NO	PPS	V, R	X	X	X	X	Standard for Ruby (R) sealing

*Please contact ODE if you wish to combine more options.

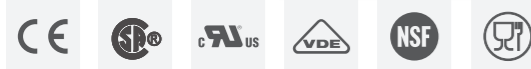
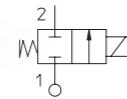
CODIFICATION

OPTIONS AVAILABILITY

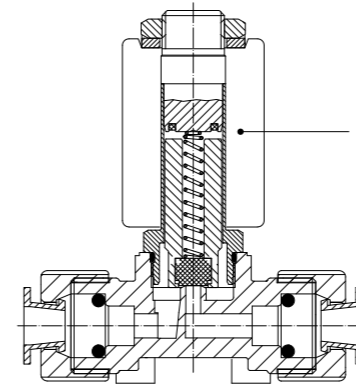
21JN - 21JL - 21JP SERIES

Food Grade NSF - 2-way - direct acting

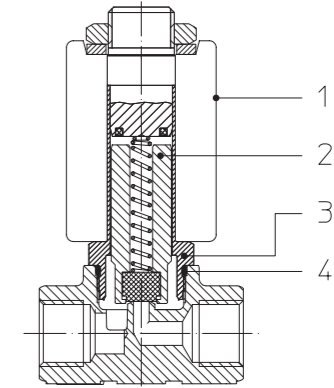
21JN - 21JL - 21JP Series are compact 2-way direct acting valves with 10 mm armature tube. Thanks to a wide range of flow and pressure ratings these valves can be suitable for several applications. The armature tube is made of stainless steel to ensure greater strength and durability to the valve.



PPS, PUSH IN



BRASS, G1/8



Solenoid valves - Food Grade NSF - 2-way - Direct Acting ■ 21JN - 21JL - 21JP SERIES

TECHNICAL DATA

PORT CONNECTION	G1/8 (M and F), plug-in, hose connection, PUSH-IN for OD 4, 6 mm	
SEALING MATERIALS	FKM	EPDM
FLUID TEMPERATURE	-10°C +140°C	-10°C +140°C
FLUIDS	Air, water, steam	
VISCOSITY	12 cSt up to orifice 1.5 mm, 37 cSt for orifice 2.0 mm and above	
TUBE Ø - COIL WIDTH - SERIES	ø 10 mm - 22 mm	LBV05 (class H) LBV08 (class H), ED 50%
INSTALLATION	as required, preferably with actuator upright	
PROTECTION DEGREE	IP65 EN 60529 (DIN 40050) with plug connector	

MATERIALS

BODY, ORIFICE	Low lead brass, stainless steel AISI 316 or PPS
ARMATURE TUBE	Stainless steel AISI Series 300
FIXED CORE	Stainless steel AISI Series 400
PLUNGER	Stainless steel AISI Series 400
PHASE DISPLACEMENT RING	Copper (Cu 99,9%) or gold plated copper
SPRING	Stainless steel AISI Series 300
SEALING	V=FKM, E=EPDM

■ V = FKM+EPDM for valves with PPS body and PUSH IN connections.

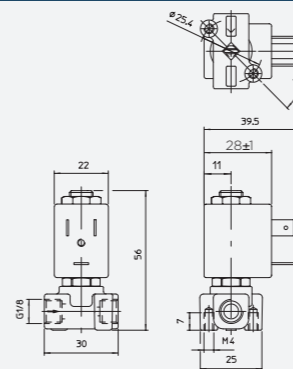
■ **CE**
- 2014/35/EU (LVD)
- 2014/30/EU (EMC)
- 2014/68/EU (PED)
art. 4.3 up to 1"

■ **UL** recognized and **VDE, CSA**
approved coils are available for this series, please refer to coil section.

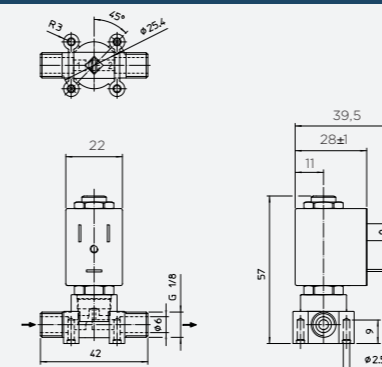
■ **NSF/ANSI 169** certification (Special Food Equipment and Devices) is available for this series. Valves with NSF approval are in compliance with CE regulation 1935/2004.

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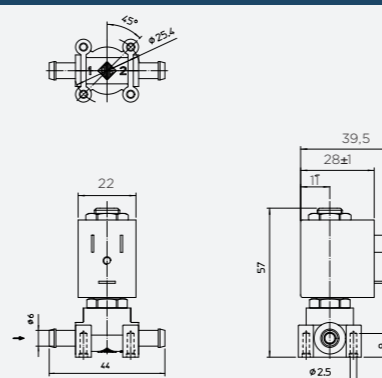
DRAWING 1



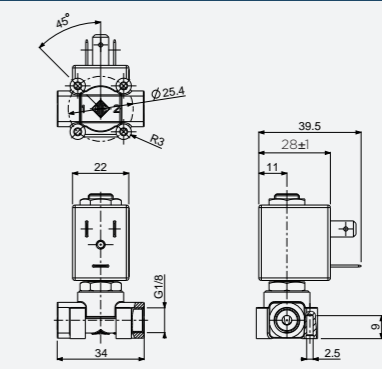
DRAWING 3



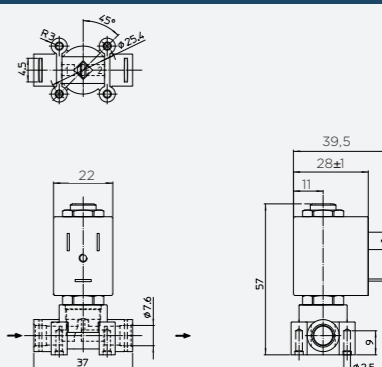
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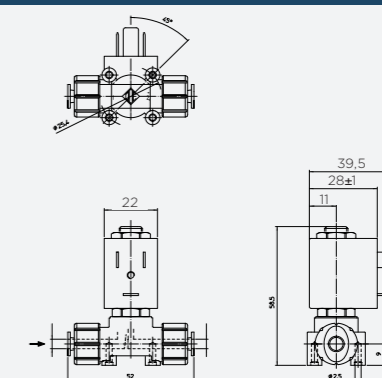
DRAWING 2



DRAWING 4

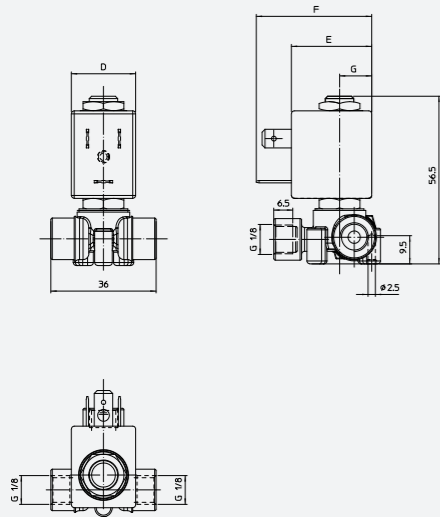


DRAWING 6



■ The fluids listed in the "technical data" tables should be considered as a recommendation. Please check the chemical compatibility of the fluids with the materials of the valve at RFQ stage.
■ G type thread in accordance with ISO 228/1.
■ For spare parts list please refer to the dedicated chapter.

DRAWING 7



I	II	III	IV	V	VI	VII	VIII	IX	X
2	1		JN	1	R	1	V	12	- T3

CODIFICATION

- I. NUMBER OF WAYS**
2 - 2 - way
- II. NUMBER OF ELEMENTS**
1 - 1 element
- III. ARMATURE TUBE MATERIAL**
Blank - std
6 - AISI 316 (optional, valid for NC versions, brass and PPS body only)
- IV. SERIES**
JN - low lead brass body
JL - StSt body
JP - PPS body
JM - PPS body, modular
- V. CONNECTIONS**
For JN, JL Series *
1 - G 1/8 (F)
For JP Series
1 - G 1/8 (F)
A - G 1/8 (M)
B - Plug in
P - hose connection 6 mm
5 - PUSH IN for OD 4 mm
6 - PUSH IN for OD 6 mm
For JM Series
X2 - G 1/8 (F) double inlet
- VI. CORE TUBE TYPE**
R - for 2/2 NC valves
- VII. PHASE DISP. RING MATERIAL**
0 - copper
1 - gold plated copper
- VIII. SEALING MATERIAL**
V - FKM
E - EPDM
- IX. ORIFICE Ø [mm] MULTIPLIED BY 10**
- X. NSF CERTIFICATION**
For JN series
T3 - Low lead brass body
For JL series
T4 - StSt body
For JP series
T0 - PPS body

* Push in connections can be made with additional fittings. Please contact ODE for further informations.

2/2 NC

PIPE	ORIFICE SIZE [mm]	Kv [l/min]	COIL SERIES	PRESSURE [bar]				CODE			DRAWING REF.
				MIN.	MOPD		PS	BRASS	STAINLESS STEEL	PPS	
					AC	DC					
G 1/8 (F)	1,2	0,7	L**05	0	15	12	16	-	-	21JP1R1V12-T0	2
			L**05	0	25	12	40	21JN1R1V12-T3	21JL1R1V12-T4	-	1
G 1/8 (M)	2,3	2,3	L**05	0	15	8	16	-	-	21JP1R1V23-T0	2
			L**05	0	18	8	40	21JN1R1V23-T3	21JL1R1V23-T4	-	1
G 1/8 (F) double inlet	1,2	0,7	L**05	0	15	12	16	-	-	21JPAR1V12-T0	3
	2,3	2,3	L**05	0	15	8	16	-	-	21JPAR1V23-T0	3
Plug in	1,2	0,7	L**05	0	15	12	16	-	-	21JMX2R1V23-T0	7
	2,3	2,3	L**05	0	15	8	16	-	-	21JPBR1V12-T0	4
Hose conn. Ø 6	1,2	0,7	L**05	0	15	12	16	-	-	21JPBR1V23-T0	4
	2,3	2,3	L**05	0	15	8	16	-	-	21JPPR1V12-T0	5
PUSH IN OD 4 mm	1,2	0,7	L**05	0	15	12	16	-	-	21JP5R1V23-T0	5
	2,3	2,3	L**05	0	15	8	16	-	-	21JP5R1V12-T0	6
PUSH IN OD 6 mm	1,2	0,7	L**05	0	15	12	16	-	-	21JP5R1V23-T0	6
	2,3	2,3	L**05	0	15	8	16	-	-	21JP6R1V12-T0	6
			L**05	0	15	8	16	-	-	21JP6R1V23-T0	6

- For sealing different from FKM, replace the letter "V" with the ones corresponding to the other seals.
V=FKM, E=EPDM
- For application with steam or with PS > 16 bar please consult our Technical Service.
- The Kv values refer to the orifice and do not take into account any reductions due to the size of the connection pipe.
- Coil nut assembly 2 Nm max, armature tube 4 Nm.
- For tubes: PA and PTFE tolerance max (±0.1).
- Available on request and with minimum quantities.

AM - JM SERIES

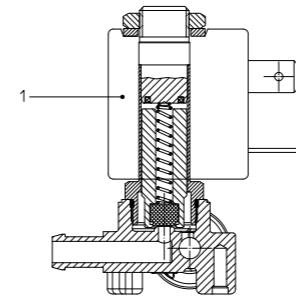
Food Grade NSF, Direct Acting

AM and **JM** are direct acting solenoid valves. The fixed core and armature tube are welded together to enhance pressure resistance and leak-tightness. Valves do not require a minimum operating pressure. A large selection of seal materials provides wide chemical compatibility. AC/DC interchangeability of the coil is possible for both NC and NO configurations.

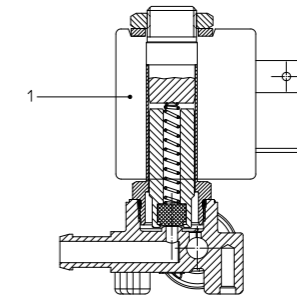
Your Gateway to Excellence



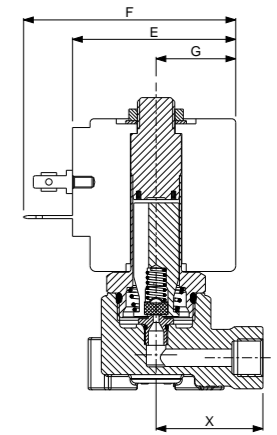
JM SERIES



JM SERIES, DC VERSION



AM SERIES



Solenoid Valves ■ General purpose ■ Food Grade NSF ■ **AM - JM SERIES**

TECHNICAL DATA

PORT CONNECTION	G 1/8 (F), G1/8 (M), Hose connection Ø6, fast fitting, push in	
SEALING MATERIALS	FKM	EPDM*
FLUID TEMPERATURE	-10°C +140°C	
FLUIDS	Air, water, inert gas, steam	Water, inert gas, steam
VISCOSITY	12 cSt up to orifice 1.5 mm, 37 cSt for orifice 2.0 and 2.3 mm, 53 cSt for orifice 2.5 mm and above	
TUBE Ø - COIL WIDTH - SERIES	JM-AM	ø 10 mm - 22 mm LBA05, LTA05 (class F), LBV05 (class H)
	JM-AM	ø 10 mm - 22 mm LBV08 (class H), ED 50%
	AM	ø 13 mm - 30 mm BDA08, BVA08 (class F), BDV08 (class H)
INSTALLATION	as required, preferably with actuator upright	
PROTECTION DEGREE	IP65 EN 60529 (DIN 40050) with plug connector	

* Available on request with minimum order quantity.

MATERIALS

BODY	PPS
ORIFICE	For JM series: PPS For AM series: stainless steel
ARMATURE TUBE	Stainless steel AISI series 300
FIXED CORE	Stainless steel AISI series 400
PLUNGER	Stainless steel AISI series 400
PHASE DISPLACEMENT RING	Gold plated copper
SPRING	Stainless steel AISI series 300
SEALING	V=FKM, E=EPDM

V = FKM+EPDM for valves with PPS body and PUSH IN connections.

CE

- 2014/35/EU (LVD)
- 2014/30/EU (EMC)
- 2014/68/EU (PED)
art. 4.3 up to 1"

UL recognized and VDE, CSA

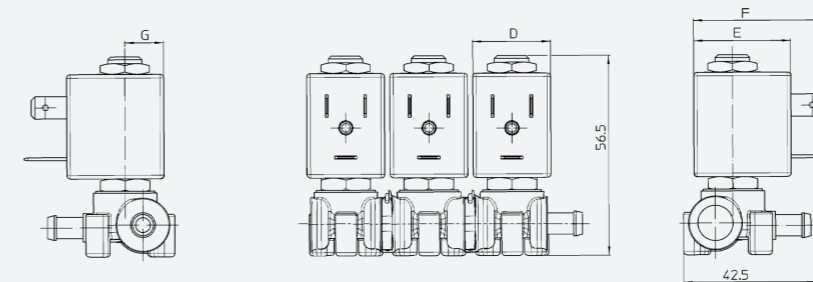
approved coils are available for this series, please refer to coil section.

NSF/ANSI 169 certification

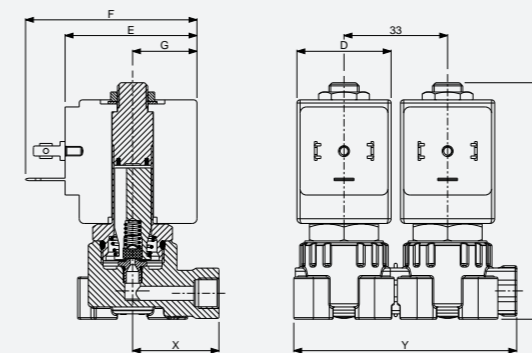
(Special Food Equipment and Devices) is available for this series. Valves with NSF approval are in compliance with CE regulation 1935/2004.

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DRAWING 1



DRAWING 2



SERIES	DIMENSIONS [mm]					
	D	E	F	G	X	Y
JM SERIES	22	28±1	39,5	11	-	-
AM SERIES	30	42	54	20,5	27,5	71 (G1/8 F) 74,5 (hose conn.)

■ The fluids listed in the "technical data" tables should be considered as a recommendation. Please check the chemical compatibility of the fluids with the materials of the valve at RFQ stage.
■ G type thread in accordance with ISO 228/1.
■ For spare parts list please refer to the dedicated chapter.

JM SERIES

PIPE	ORIFICE SIZE [mm]	Kv [l/min]	COIL SERIES	PRESSURE [bar]			
				MIN.	MOPD		PS
					AC	DC	
REF. TO CODIFICATION TABLE	1,2	0,7	L**05	0	15	15	16
	1,5	1,1	L**05	0	15	15	16
	2	1,8	L**05	0	15	8	16
	2,3	2,3	L**05	0	15	6	16
	2,6	2,4	L**05	0	10	3,5	16

JM SERIES, DC VERSION

PIPE	ORIFICE SIZE [mm]	Kv [l/min]	COIL SERIES	PRESSURE [bar]			
				MIN.	MOPD		PS
					AC	DC	
REF. TO CODIFICATION TABLE	1,2	0,7	L**05	0	-	15	16
	1,5	1,1	L**05	0	-	15	16
	1,8	1,6	L**05	0	-	12	16
	1,8	1,6	LBV08*	0	-	16	16
	2	1,8	L**05	0	-	8	16
	2	1,8	LBV08*	0	-	16	16
	2,3	2,3	L**05	0	-	6	16
	2,6	2,4	L**05	0	-	3,5	16

*LBV08 has ED50%. Please refer to coil chapter for further details.

AM SERIES

PIPE	ORIFICE SIZE [mm]	Kv [l/min]	COIL SERIES	PRESSURE [bar]			
				MIN.	MOPD		PS
					AC	DC	
REF. TO CODIFICATION TABLE	1,5	1	B**08	0	16	16	16
	2	1,8	B**08	0	16	16	16
	2,5	2,5	B**08	0	14	9	16
	3	3	B**08	0	10	6	16

- For application with steam or with PS > 16 bar please consult our Technical Service
- The Kv values refer to the orifice and do not take into account any reductions due to the size of the connection pipe
- Max torques: fittings 2 Nm, coil nut assembly 2 Nm, armature tube 4 Nm
- Use fitting seal compatible with body material
- Don't mount the groups with 1 or more elements cantilevered
- Not suitable for vacuum use
- Available on request and with minimum quantities.

I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	
2	4		M	A	2	V	BD	BD	BD	BD	-	TO

I. NUMBER OF WAYS

2 - 2 - way

II. NUMBER OF ELEMENTS

- 2 - number of elements
- 3 - number of elements
- 4 - number of elements

III. ARMATURE TUBE MATERIAL

- Blank - std
- 6 - AISI (optional, NC element)

IV. SERIES

- M - modular JM Series

V. INLET SIDE

- A - right inlet
- B - left inlet
- X - double inlet

VI. INLET CONNECTION

- 1 - G1/8 (M)
- 2 - G1/8 (F)
- 3 - hose connection
- 4 - fast connection
- U - PUSH IN for OD 4 mm
- V - PUSH IN for OD 6 mm

VII. SEALING MATERIAL

- V - FKM
- E - EPDM

VIII. FIRST ELEMENT TYPE

IX. SECOND ELEMENT TYPE

X. THIRD ELEMENT TYPE *

* blank if not used

XI. FOURTH ELEMENT TYPE *

* blank if not used

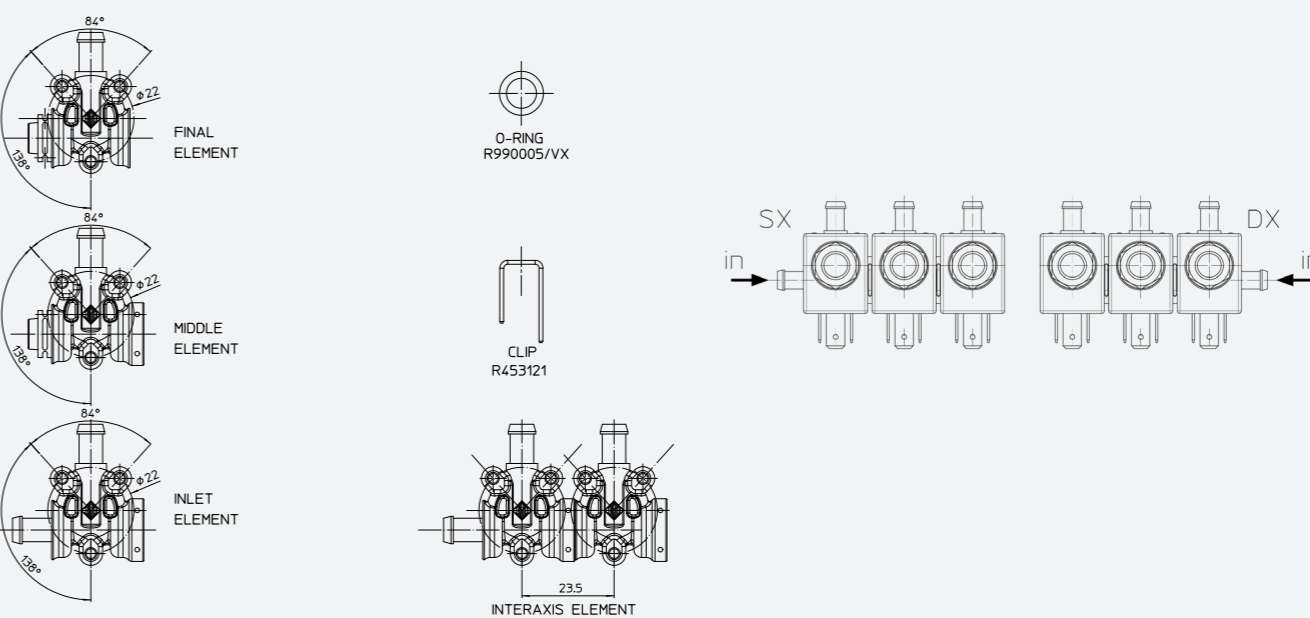
XII. NSF CERTIFICATION

TO - PPS body

OUTLET CONN.	ORIFICE [mm]	VERSION	ELEMENT CODE
G1/8 (F)	1,2	AC, DC	AD
G1/8 (F)	1,5	AC, DC	AO
G1/8 (F)	2	AC, DC	AQ
G1/8 (F)	2,3	AC, DC	AE
G1/8 (F)	2,6	AC, DC	AF
G1/8 (F)	1,2	DC	AG
G1/8 (F)	1,5	DC	AR
G1/8 (F)	1,8	DC	AS
G1/8 (F)	2	DC	AT
G1/8 (F)	2,3	DC	AH
G1/8 (F)	2,6	DC	AI
G1/8 (M)	1,2	AC, DC	BD
G1/8 (M)	1,5	AC, DC	BO
G1/8 (M)	2	AC, DC	BQ
G1/8 (M)	2,3	AC, DC	BE
G1/8 (M)	2,6	AC, DC	BF
G1/8 (M)	1,2	DC	BG
G1/8 (M)	1,5	DC	BR
G1/8 (M)	1,8	DC	BS
G1/8 (M)	2	DC	BT
G1/8 (M)	2,3	DC	BH
G1/8 (M)	2,6	DC	BI
Hose connection	1,2	AC, DC	CD
Hose connection	1,5	AC, DC	CO
Hose connection	2	AC, DC	CQ
Hose connection	2,3	AC, DC	CE
Hose connection	2,6	AC, DC	CF
Hose connection	1,2	DC	CG
Hose connection	1,5	DC	CR
Hose connection	1,8	DC	CS
Hose connection	2	DC	CT
Hose connection	2,3	DC	CH
Hose connection	2,6	DC	CI

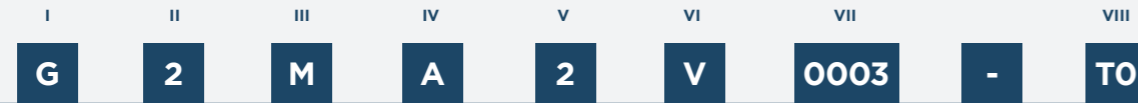
OUTLET CONN.	ORIFICE [mm]	VERSION	ELEMENT CODE
Fast fitting	1,2	AC, DC	DD
Fast fitting	1,5	AC, DC	DO
Fast fitting	2	AC, DC	DQ
Fast fitting	2,3	AC, DC	DE
Fast fitting	2,6	AC, DC	DF
Fast fitting	1,2	DC	DG
Fast fitting	1,5	DC	DR
Fast fitting	1,8	DC	DS
Fast fitting	2	DC	DT
Fast fitting	2,3	DC	DH
Fast fitting	2,6	DC	DI
P.I. Ø4mm	1,2	AC, DC	ED
P.I. Ø4mm	1,5	AC, DC	EO
P.I. Ø4mm	2	AC, DC	EQ
P.I. Ø4mm	2,3	AC, DC	EE
P.I. Ø4mm	2,6	AC, DC	EF
P.I. Ø4mm	1,2	DC	EG
P.I. Ø4mm	1,5	DC	ER
P.I. Ø4mm	1,8	DC	ES
P.I. Ø4mm	2	DC	ET
P.I. Ø4mm	2,3	DC	EH
P.I. Ø4mm	2,6	DC	EI
P.I. Ø6mm	1,2	AC, DC	FD
P.I. Ø6mm	1,5	AC, DC	FO
P.I. Ø6mm	2	AC, DC	FQ
P.I. Ø6mm	2,3	AC, DC	FE
P.I. Ø6mm	2,6	AC, DC	FF
P.I. Ø6mm	1,2	DC	FG
P.I. Ø6mm	1,5	DC	FR
P.I. Ø6mm	1,8	DC	FS
P.I. Ø6mm	2	DC	FT
P.I. Ø6mm	2,3	DC	FH
P.I. Ø6mm	2,6	DC	FI

- Please contact ODE to configure manifolds of 5 elements and above
- Some element types/combinations have a minimum order quantity. Please contact ODE before order.



JM SERIES - CODIFICATION

AM SERIES - CODIFICATION



I. TYPE OF VALVE

G - manifold

II. NUMBER OF ELEMENTS

- 2 - number of elements
- 3 - number of elements
- 4 - number of elements

III. SERIES

M - modular AM Series

IV. INLET SIDE

- A - right inlet
- B - left inlet

V. INLET CONNECTION

- 2 - G1/8 (F)
- 3 - hose connection

VI. SEALING MATERIAL

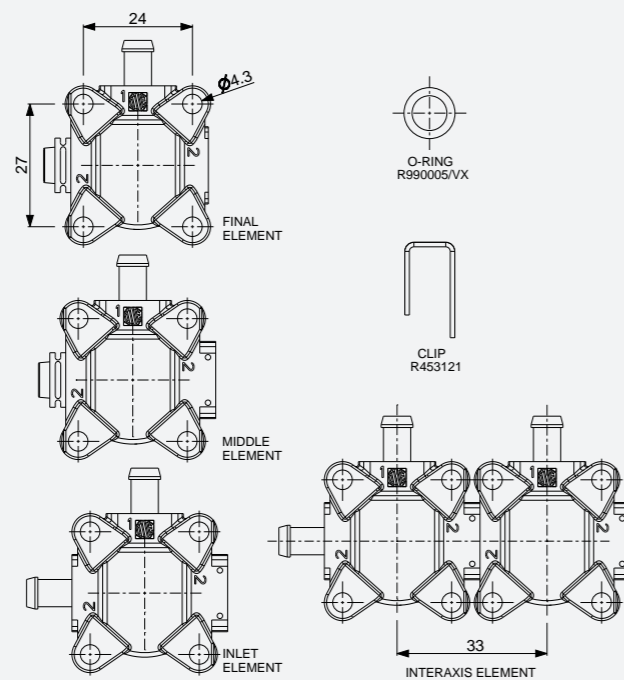
- V - FKM
- E - EPDM

VII. SERIAL NUMBER

VIII. NSF CERTIFICATION

TO - PPS body

- Serial number is to be assigned by ODE for every specific configuration. Please contact ODE before order.
- Please contact ODE to configure manifolds of 5 elements and above
- Some element types/combinations have a minimum order quantity. Please contact ODE before order.



OPTIONAL FEATURES

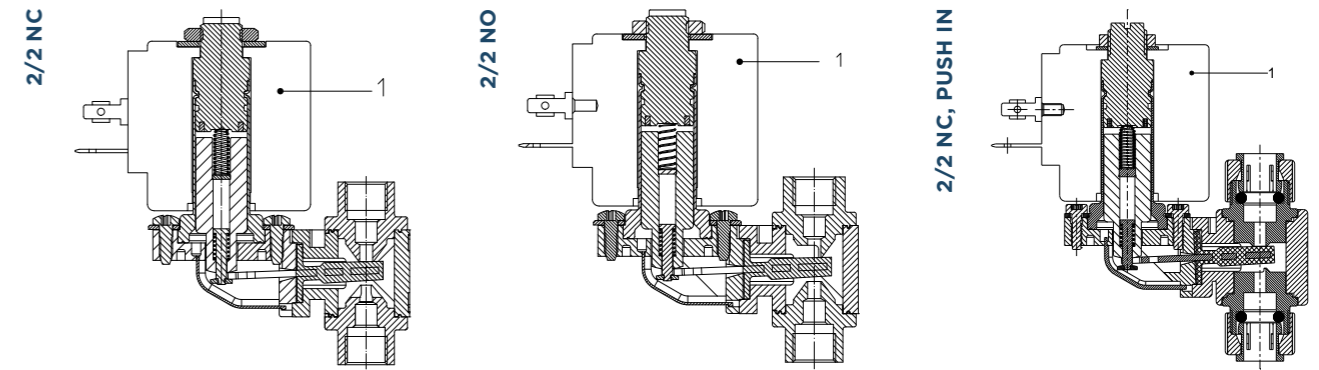
FEATURES	JM SERIES	AM SERIES	NOTES
DISTRIBUTING FUNCTION	X	X	Single inlet, multiple outlet
MIXING FUNCTION		X	Multiple inlet, single outlet Please contact ODE for codification and performances
2/2 NO ELEMENT	X	X	Please contact ODE for codification and performances
3/2 NC ELEMENT	X (only as last element)	X	Please contact ODE for codification and performances
FLANGE CONNECTION		X	Please contact ODE for codification and performances
OPTIONALS	JM SERIES	AM SERIES	NOTES
AISI 316 ARMATURE TUBE	X	X	-
STAINLESS STEEL ORIFICE		X	Standard for AM series

JM and AM elements can be assembled together. Please contact ODE for further information

21KP SERIES

Food Grade NSF, Direct Acting

21KP are total separation, lever type solenoid valves. Valves do not require a minimum operating pressure. A large selection of seal materials provides wide chemical compatibility. AC/DC interchangeability of the coil is possible for both NC and NO configurations.



Solenoid Valves ■ General purpose ■ Food Grade NSF ■ **21KP SERIES**

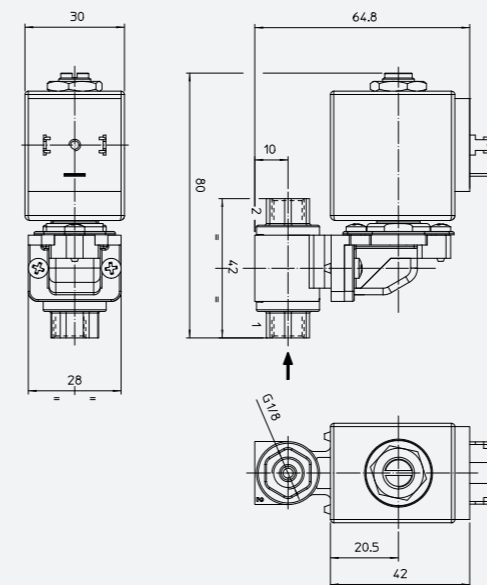
TECHNICAL DATA

PORT CONNECTION	G 1/8 (F), push in OD 8 mm	
SEALING MATERIALS	VMQ	FKM
FLUID TEMPERATURE	+2°C +100°C	-10°C +140°C
FLUIDS	Air, water, neutral fluids	
VISCOSITY	21 cSt	
TUBE Ø - COIL WIDTH - SERIES	Ø 13 mm - 30 mm	BDV08 (class H)
	Ø 13 mm - 30 mm	UDV16 (class H)
PROTECTION DEGREE	IP65 EN 60529 (DIN 40050) with plug connector	

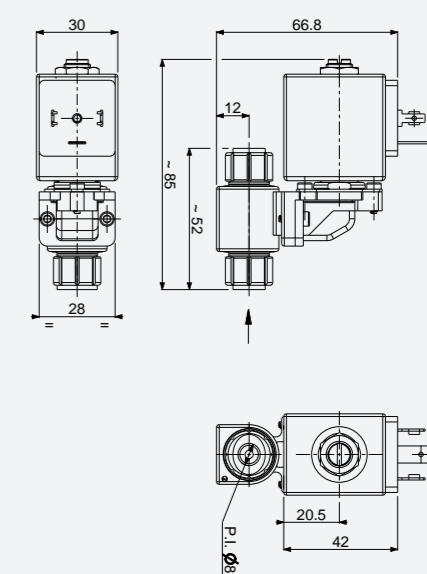
MATERIALS

BODY, ORIFICE	PSU (polysulphone)
ARMATURE TUBE	Brass - UNI EN 12164 CW614N
FIXED CORE	Stainless steel AISI series 400
PLUNGER	Stainless steel AISI series 400
PHASE DISPLACEMENT RING	Copper
SPRING	Stainless steel AISI series 300
SEALING	S= VMQ, V=FKM
MOUNTING BRACKET	Stainless steel AISI 304

DRAWING 1



DRAWING 2



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- **CE**
 - 2014/35/EU (LVD)
 - 2014/30/EU (EMC)
 - 2014/68/EU (PED)
 - art. 4.3 up to 1"
- **UL** recognized and **VDE, CSA**
 - approved coils are available for this series, please refer to coil section.
- **NSF/ANSI 169** certification (Special Food Equipment and Devices) is available for this series. Valves with NSF approval are in compliance with CE regulation 1935/2004.

- The fluids listed in the "technical data" tables should be considered as a recommendation. Please check the chemical compatibility of the fluids with the materials of the valve at RFQ stage.
- G type thread in accordance with ISO 228/1.
- For spare parts list please refer to the dedicated chapter.

2/2 NC

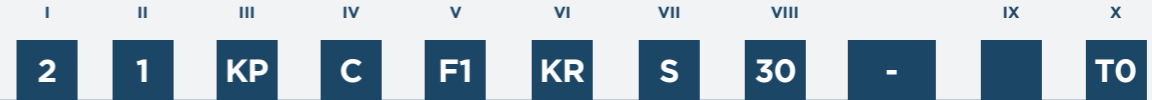
PIPE	ORIFICE SIZE Ø [mm]	Kv [l/min]	COIL SERIES	PRESSURE [bar]			CODE	DRAWING REFERENCE	
				MIN	MOPD				PS
					AC	DC			
G1/8	3	2,8	B**08	0	6	4	8	21KPCF1KRS30-T0	1
			UDV16	0	-	6	8	21KPCF1KRS30-T0	1
push in OD 8 mm	3	2,8	B**08	0	6	4	8	21KPCM5KRS30-T0	2
			UDV16	0	-	6	8	21KPCM5KRS30-T0	2

- For sealing different from VMQ replace the letter "S" with the ones corresponding to the other materials.
S = VMQ, V = FKM
- Max torque for fittings assembly 2 Nm
- In case glue is used to seal the fittings, verify the compatibility with body material

2/2 NO

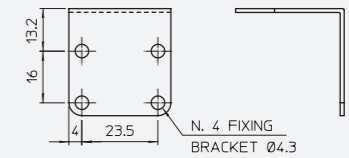
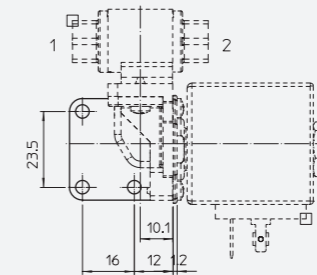
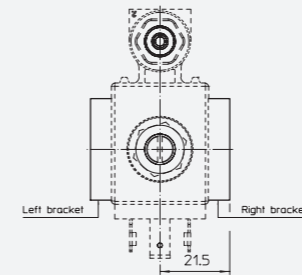
PIPE	ORIFICE SIZE Ø [mm]	Kv [l/min]	COIL SERIES	PRESSURE [bar]			CODE	DRAWING REFERENCE	
				MIN	MOPD				PS
					AC	DC			
G1/8	3	2,8	B**08	0	4	4	8	21KPAF1KRS30-T0	1

- For sealing different from VMQ replace the letter "S" with the ones corresponding to the other materials.
S = VMQ, V = FKM
- Max torque for fittings assembly 2 Nm
- In case glue is used to seal the fittings, verify the compatibility with body material



CODIFICATION

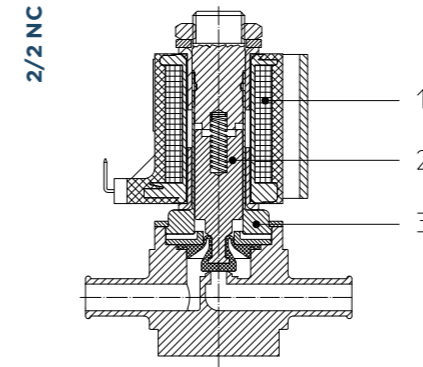
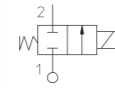
- I. NUMBER OF WAYS**
2 - 2 - way
- II. NUMBER OF ELEMENTS**
1 - number of elements
- III. SERIES**
KP - total separation, lever valves
- IV. FUNCTION**
C - NC
A - NA
- V. CONNECTIONS**
F1 - G1/8 (F)
M5 - Push in for OD 8 mm
- VI. CORE TUBE TYPE**
KR - Ø 13 mm
- VII. SEALING MATERIAL**
S - VMQ
V - FKM
- VIII. ORIFICE Ø [mm] MULTIPLIED BY 10**
- IX. OPTIONS**
LD - mounting bracket on "right" side
LS - mounting bracket on "left" side
- X. NSF CERTIFICATION**
T0 - PSU body



21SBG SERIES

Food Grade NSF, Direct Acting

21SBG are total separation, diaphragm type solenoid valves. Valves do not require a minimum operating pressure. 21SBG valves can be inspected and are suitable for liquid media.



Solenoid Valves ■ General purpose ■ Food Grade NSF ■ **21SBG SERIES**

TECHNICAL DATA

PORT CONNECTION	Hose connection Ø 7 mm	
SEALING MATERIALS	EPDM	
FLUID TEMPERATURE	0°C +95°C	
FLUIDS	Water	
VISCOSITY	-	
TUBE Ø - SERIES	ø 10 mm	HLR7X024CS (class F)
PROTECTION DEGREE	IP00	

- Nominal voltage = 24V DC
- Nominal (cold) power consumption = 7,5 W

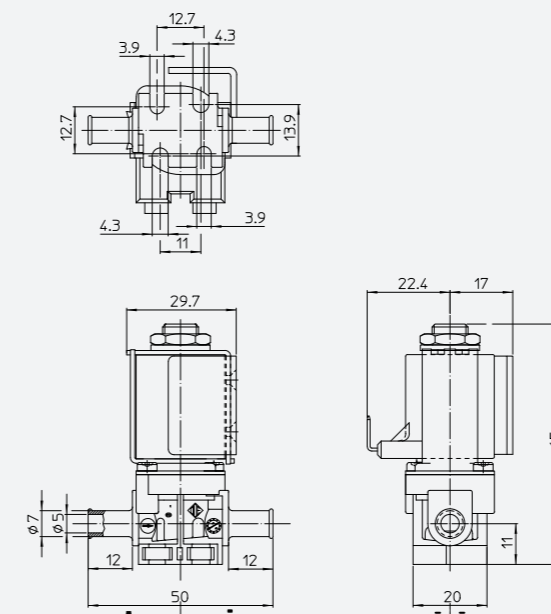
MATERIALS

BODY, ORIFICE	PEI (Polyetherimide)	
ARMATURE TUBE	Brass - UNI EN 12164 CW614N	
FIXED CORE	Stainless steel AISI series 400	
PLUNGER	Stainless steel AISI series 400	
SPRING	Stainless steel AISI series 300	
SEALING	E=EPDM	

- **CE**
 - 2014/35/EU (LVD)
 - 2014/30/EU (EMC)
 - 2014/68/EU (PED)
 - art. 4.3 up to 1"

- **NSF/ANSI 169** certification (Special Food Equipment and Devices) is available for this series. Valves with NSF approval are in compliance with CE regulation 1935/2004.

DRAWING 1



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▪ The fluids listed in the "technical data" tables should be considered as a recommendation. Please check the chemical compatibility of the fluids with the materials of the valve at RFQ stage.
 ▪ For spare parts list please refer to the dedicated chapter.

2/2 NC

PIPE	ORIFICE SIZE		Kv [l/min]	COIL SERIES	PRESSURE [bar]				CODE	DRAWING REFERENCE
	Ø [mm]				MIN	MOPD		PS		
						AC	DC			
Hose connection Ø 7 mm	3	4	HLR7X024CS	0	-	1	1	21SBGS4E30_H036	1	
	5	6	HLR7X024CS	0	-	1	1	21SBGS4E50_H036	1	

- Code is comprehensive of coil
- Available on request with minimum quantities.

CODIFICATION

I	II	III	IV	V	VI	VII	VIII
2	1	SBG	S	4	E	30	- H036

I. NUMBER OF WAYS

2 - 2 - way

II. NUMBER OF ELEMENTS

1 - 1 element

III. SERIES

SBG - total separation diaphragm valve

IV. CORE TUBE TYPE

S - Ø10 mm, for total separation valve

V. PHASE DISP. RING MATERIAL

4 - none

VI. SEALING MATERIAL

E - EPDM

VII. ORIFICE Ø [mm] MULTIPLIED BY 10

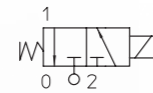
VIII. COIL CODE

H036 - Coil HLR7X024CS

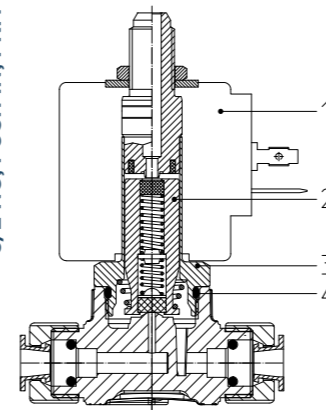
31A-31L-31ALB-31AP SERIES

Food Grade NSF, 2-way, Direct Acting

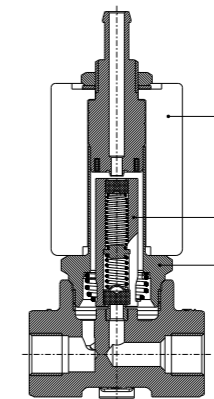
31A, 31L and **31AP** are direct acting solenoid valves. The fixed core and armature tube are welded together to enhance pressure resistance and leak-tightness. Valves do not require a minimum operating pressure. AC/DC interchangeability of the coil is possible for both NC and NO configurations.



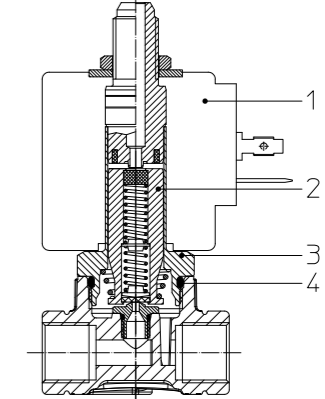
3/2 NC, PUSH IN, FKM



3/2 NC, BRASS, FKM



3/2 NC, PPS, RUBY



Solenoid Valves ■ Food Grade NSF ■ 2-way ■ Direct Acting ■ 31A 31L 31ALB 31AP SERIES

TECHNICAL DATA

PORT CONNECTION	G1/8, G1/4, Flange connection, PUSH-IN for OD 4, 6, 8 mm		
SEALING MATERIALS	FKM	EPDM*	RUBY
FLUID TEMPERATURE	-10°C +140°C	-10°C +140°C	-40°C +180°C
FLUIDS	Water, steam, air	Water, steam	Water, steam
VISCOSITY	12 cSt up to orifice 1.5 mm, 37 cSt for orifice 2.0 mm, 53 cSt for orifice 2.5 mm and above		
TUBE Ø - COIL WIDTH - SERIES	Ø 13 mm - 30 mm		BDV08 (CLASS H)
INSTALLATION	As required, preferably with actuator upright		
PROTECTION DEGREE	IP 65 EN 60529 (DIN 40050) with connector		

* Available on request with minimum order quantity.

MATERIALS

BODY	Low lead brass, stainless steel AISI 316 or PPS
ORIFICE	Brass body: ≤ 3 mm Stainless steel AISI series 300, > 3 mm Low lead brass AISI 316 body: AISI 316
ARMATURE TUBE	PPS body: PPS for V sealing, Stainless Steel for R sealing Stainless steel AISI series 300
FIXED CORE	Stainless steel AISI series 400
PLUNGER	Stainless steel AISI series 400
PHASE DISPLACEMENT RING	Copper (Cu 99,9%) or Gold plated copper
SPRING	Stainless steel AISI series 300
SEALING*	V=FKM*, E=EPDM, R=RUBY Flange sealing are made of VMQ

* V = FKM+EPDM for valves with PPS body and PUSH IN connections.

CE

- 2014/35/EU (LVD)
- 2014/30/EU (EMC)
- 2014/68/EU (PED) art. 4.3 up to 1"

UL recognized and VDE, CSA

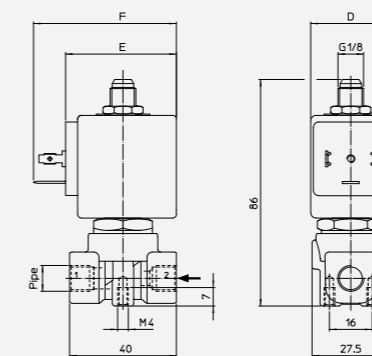
- approved coils are available for this series, please refer to coil section.

NSF/ANSI 169 certification

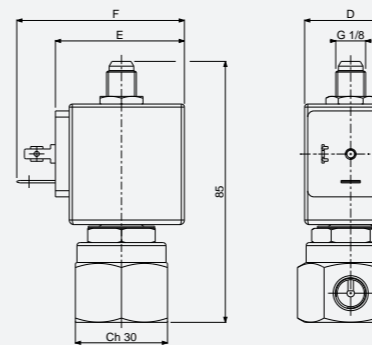
- (Special Food Equipment and Devices) is available for this series. Valves with NSF approval are in compliance with CE regulation 1935/2004.

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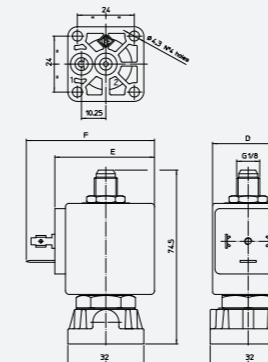
DRAWING 1



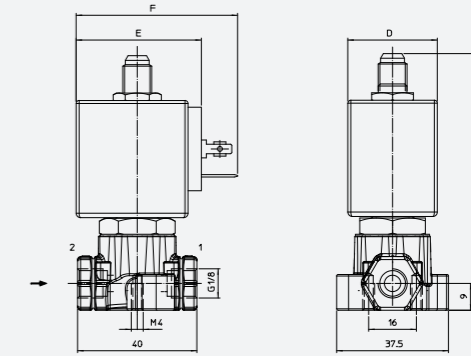
DRAWING 3



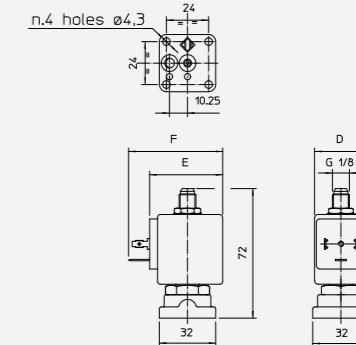
DRAWING 5



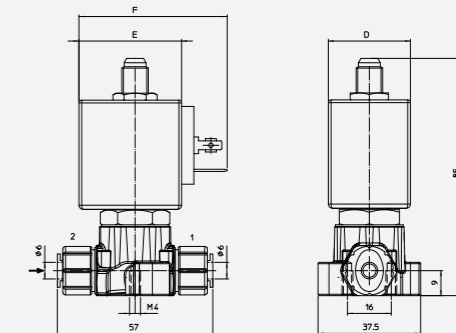
DRAWING 2



DRAWING 4

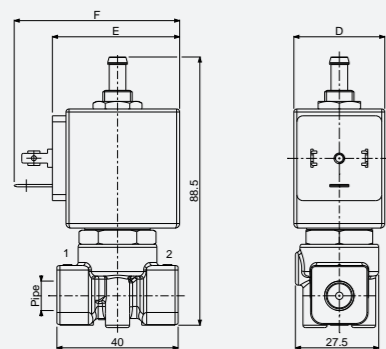


DRAWING 6

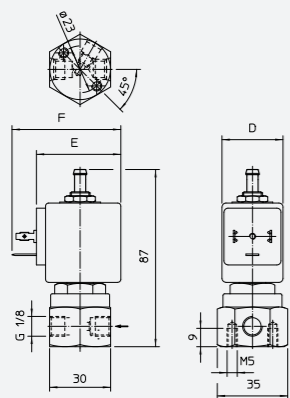


■ The fluids listed in the "technical data" tables should be considered as a recommendation. Please check the chemical compatibility of the fluids with the materials of the valve at RFQ stage.
 ■ G type thread in accordance with ISO 228/1.
 ■ For spare parts list please refer to the dedicated chapter.

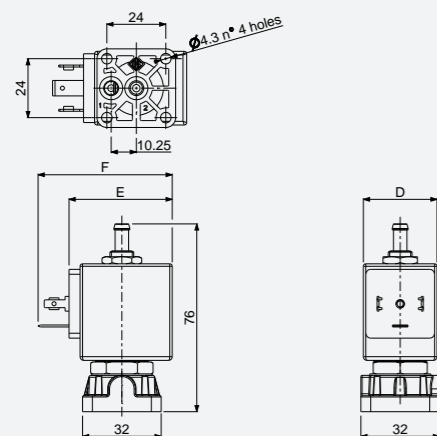
DRAWING 7



DRAWING 9

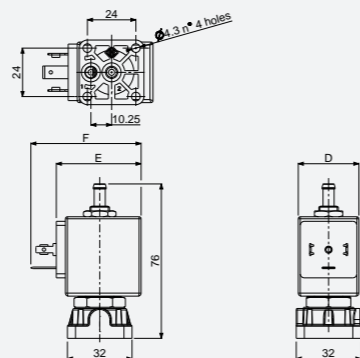


DRAWING 11

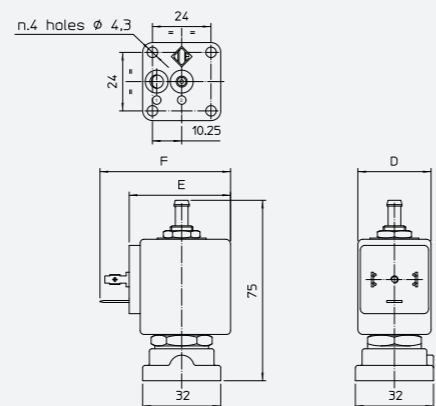


DIMENSIONS [mm]		
D	E	F
30	42	54

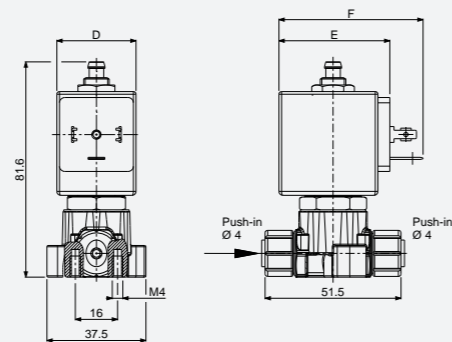
DRAWING 8



DRAWING 10



DRAWING 12



PIPE	ORIFICE SIZE [mm]	Kv [l/min]	COIL SERIES	PRESSURE [bar]			CODE			DRAWING REF.	
				MIN.	MOPD		BRASS	STAINLESS STEEL	PPS		
					AC	DC					PS
G1/8	1	0,45	B**08	0	20	20	40	31A31A1V10-T3	-	-	1
	1,5	1,1	B**08	0	15	15	25*	-	-	31AP1A1V15-T0	2
		1,4	B**08	0	15	15	40	31A31A1V15-T3	31L11A1V15-T4	-	1 3
	2	1,8	B**08	0	10	10	25*	-	-	31AP1A1V20-T0	2
		2	B**08	0	10	10	40	31A31A1V20-T3	-	-	1
	2,5	2,5	B**08	0	6	6	25*	-	-	31AP1A1V25-T0	2
3,2		B**08	0	6	6	40	31A31A1V25-T3	-	-	1	
3	3,4	B**08	0	5	5	25*	-	-	31AP1A1V30-T0	2	
	4	B**08	0	5	5	40	31A31A1V30-T3	-	-	1	
4,5	6,5	B**08	0	3	3	40	31A31A6V45-T3	-	-	1	
	0,45	B**08	0	20	20	40	31A22A1V10-T3	-	-	1	
G1/4	1,5	1,1	B**08	0	20	20	25*	-	-	31AP2A1V15-T0	2
	1,5	1,4	B**08	0	15	15	40	31A22A1V15-T3	-	-	1
		1,8	B**08	0	15	15	25*	-	-	31AP2A1V20-T0	2
	2	2	B**08	0	10	10	40	31A22A1V20-T3	-	-	1
		2,5	B**08	0	10	10	25*	-	-	31AP2A1V25-T0	2
	2,5	3,2	B**08	0	6	6	40	31A22A1V25-T3	-	-	1
3,4		B**08	0	6	6	25*	-	-	31AP2A1V30-T0	2	
3	4	B**08	0	5	5	40	31A22A1V30-T3	-	-	1	
	6,5	B**08	0	3	3	40	31A22A6V45-T3	-	-	1	
FLANGE CONN.	1,5	1,4	B**08	0	15	15	25*	-	-	31APBA1V15-T0	5
	2	2	B**08	0	10	10	25*	31A1BA1V15-T3	-	-	4
		B**08	0	10	10	40	31A1BA1V20-T3	-	-	31APBA1V20-T0	5
	2,5	3,2	B**08	0	6	6	25*	-	-	31APBA1V25-T0	5
		B**08	0	6	6	40	31A1BA1V25-T3	-	-	-	4
	3	4	B**08	0	5	5	25*	-	-	31APBA1V30-T0	5
B**08		0	5	5	40	31A1BA1V30-T3	-	-	-	4	
PUSH IN OD 4 mm	1,5	1,1	B**08	0	15	15	25*	-	-	31AP5A1V15-T0	6
	2	1,8	B**08	0	10	10	25*	-	-	31AP5A1V20-T0	6
		2,5	B**08	0	6	6	25*	-	-	31AP5A1V25-T0	6
PUSH IN OD 6 mm	3	3,4	B**08	0	5	5	25*	-	-	31AP5A1V30-T0	6
	1,5	1,1	B**08	0	15	15	25*	-	-	31AP6A1V15-T0	6
		2	1,8	B**08	0	10	10	25*	-	-	31AP6A1V20-T0
PUSH IN OD 8 mm	2,5	2,5	B**08	0	6	6	25*	-	-	31AP6A1V25-T0	6
		3	3,4	B**08	0	5	5	25*	-	-	31AP6A1V30-T0
	1,5	1,1	B**08	0	15	15	25*	-	-	31AP7A1V15-T0	6
2	1,8	B**08	0	10	10	25*	-	-	31AP7A1V20-T0	6	
	2,5	B**08	0	6	6	25*	-	-	31AP7A1V25-T0	6	
3	3,4	B**08	0	5	5	25*	-	-	31AP7A1V30-T0	6	

- *Max allowable pressure (PS) 16 bar for domestic applications. Safety factor equal to 5*PS according to EN 60730-2-8.
- *Max allowable pressure (PS) 25 bar for industrial applications.
- 3rd way exhaust Ø2.5 mm
- For AP series: Coil nut assembly 2 Nm max, armature tube 4 Nm
- The Kv values refer to the orifice and do not take into account any reductions due to the size of the connection pipe
- For tubes: PA and PTFE tolerance max (±0.1)
- Available on request with minimum quantities. Please contact ODE before order.

PIPE	ORIFICE SIZE [mm]	Kv [l/min]	COIL SERIES	PRESSURE [bar]			CODE			DRAWING REF.		
				MIN.	MOPD		BRASS	STAINLESS STEEL	PPS			
					AC	DC					PS	
G1/8	1	0,45	B**08	0	20	20	40	31A31HLIV10-T3	-	-	7	
		1,1	B**08	0	15	15	25*	-	-	31APIHLIV15-TO	8	
		1,4	B**08	0	15	15	40	31A31HLIV15-T3	31L1HLIV15-T4	-	7 9	
	2	1,8	B**08	0	10	10	25*	-	-	31APIHLIV20-TO	8	
		2	B**08	0	10	10	40	31A31HLIV20-T3	-	-	7	
		2,5	B**08	0	6	6	25*	-	-	31APIHLIV25-TO	8	
	2,5	3,2	B**08	0	6	6	40	31A31HLIV25-T3	-	-	7	
		3,4	B**08	0	5	5	25*	-	-	31APIHLIV30-TO	8	
		4	B**08	0	5	5	40	31A31HLIV30-T3	-	-	7	
	G1/4	1	0,45	B**08	0	20	20	40	31A22HLIV10-T3	-	-	7
			1,1	B**08	0	20	20	25*	-	-	31AP2HLIV15-TO	8
			1,4	B**08	0	15	15	40	31A22HLIV15-T3	-	-	7
2		1,8	B**08	0	15	15	25*	-	-	31AP2HLIV20-TO	8	
		2	B**08	0	10	10	40	31A22HLIV20-T3	-	-	7	
		2,5	B**08	0	10	10	25*	-	-	31AP2HLIV25-TO	8	
2,5		3,2	B**08	0	6	6	40	31A22HLIV25-T3	-	-	7	
		3,4	B**08	0	6	6	25*	-	-	31AP2HLIV30-TO	8	
		4	B**08	0	5	5	40	31A22HLIV30-T3	-	-	7	
FLANGE CONN.		1,5	1,4	B**08	0	15	15	25*	-	-	31APBHLIV15-TO	11
			1,8	B**08	0	15	15	40	31A1BHLIV15-T3	-	-	10
			2	B**08	0	10	10	25*	-	-	31APBHLIV20-TO	11
	2	2	B**08	0	10	10	40	31A1BHLIV20-T3	-	-	10	
		2,5	B**08	0	6	6	25*	-	-	31APBHLIV25-TO	11	
		3	B**08	0	6	6	40	31A1BHLIV25-T3	-	-	10	
	3	4	B**08	0	5	5	25*	-	-	31APBHLIV30-TO	11	
		4	B**08	0	5	5	40	31A1BHLIV30-T3	-	-	10	
		1,5	1,1	B**08	0	15	15	25*	-	-	31AP5HLIV15-TO	12
	PUSH IN OD 4 mm	2	1,8	B**08	0	10	10	25*	-	-	31AP5HLIV20-TO	12
		2,5	2,5	B**08	0	6	6	25*	-	-	31AP5HLIV25-TO	12
		3	3,4	B**08	0	5	5	25*	-	-	31AP5HLIV30-TO	12
1,5		1,1	B**08	0	15	15	25*	-	-	31AP6HLIV15-TO	12	
PUSH IN OD 6 mm	2	1,8	B**08	0	10	10	25*	-	-	31AP6HLIV20-TO	12	
	2,5	2,5	B**08	0	6	6	25*	-	-	31AP6HLIV25-TO	12	
	3	3,4	B**08	0	5	5	25*	-	-	31AP6HLIV30-TO	12	
	1,5	1,1	B**08	0	15	15	25*	-	-	31AP7HLIV15-TO	12	
PUSH IN OD 8 mm	2	1,8	B**08	0	10	10	25*	-	-	31AP7HLIV20-TO	12	
	2,5	2,5	B**08	0	6	6	25*	-	-	31AP7HLIV25-TO	12	
	3	3,4	B**08	0	5	5	25*	-	-	31AP7HLIV30-TO	12	

- *Max allowable pressure (PS) 16 bar for domestic applications. Safety factor equal to 5*PS according to EN 60730-2-8.
- *Max allowable pressure (PS) 25 bar for industrial applications.
- 3rd way exhaust Ø2.5 mm
- For AP series: Coil nut assembly 2 Nm max, armature tube 4 Nm
- The Kv values refer to the orifice and do not take into account any reductions due to the size of the connection pipe
- For tubes: PA and PTFE tolerance max (±0.1)
- Available on request with minimum quantities. Please contact ODE before order.

PIPE	ORIFICE SIZE [mm]	Kv [l/min]	COIL SERIES	PRESSURE [bar]			CODE			DRAWING REF.		
				MIN.	MOPD		BRASS	STAINLESS STEEL	PPS			
					AC	DC					PS	
G1/8	1	0,45	B**08	0	20	20	40	31A31AIR10-T3	-	-	1	
		1,1	B**08	0	15	15	25*	-	-	31APIAIR15-RPTO	2	
		1,4	B**08	0	15	15	40	31A31AIR15-T3	-	-	1	
	2	1,8	B**08	0	10	10	25*	-	-	31APIAIR20-RPTO	2	
		2	B**08	0	10	10	40	31A31AIR20-T3	-	-	1	
		2,5	B**08	0	6	6	25*	-	-	31APIAIR25-RPTO	2	
	2,5	3,2	B**08	0	6	6	40	31A31AIR25-T3	-	-	1	
		3,4	B**08	0	5	5	25*	-	-	31APIAIR30-RPTO	2	
		4	B**08	0	5	5	40	31A31AIR30-T3	-	-	1	
	G1/4	1	0,45	B**08	0	20	20	40	31A22AIR10-T3	-	-	1
			1,1	B**08	0	20	20	25*	-	-	31AP2AIR15-RPTO	2
			1,4	B**08	0	15	15	40	31A22AIR15-T3	-	-	1
2		1,8	B**08	0	15	15	25*	-	-	31AP2AIR20-RPTO	2	
		2	B**08	0	10	10	40	31A22AIR20-T3	-	-	1	
		2,5	B**08	0	10	10	25*	-	-	31AP2AIR25-RPTO	2	
2,5		3,2	B**08	0	6	6	40	31A22AIR25-T3	-	-	1	
		3,4	B**08	0	6	6	25*	-	-	31AP2AIR30-RPTO	2	
		4	B**08	0	5	5	40	31A22AIR30-T3	-	-	1	
FLANGE CONN.		1,5	1,4	B**08	0	15	15	25*	-	-	31APBAIR15-RPTO	2
			1,8	B**08	0	15	15	40	31A1BAIR15-T3	-	-	4
			2	B**08	0	10	10	25*	-	-	31APBAIR20-RPTO	5
	2	2	B**08	0	10	10	40	31A1BAIR20-T3	-	-	4	
		2,5	B**08	0	6	6	25*	-	-	31APBAIR25-RPTO	5	
		3	B**08	0	6	6	40	31A1BAIR25-T3	-	-	4	
	3	4	B**08	0	5	5	25*	-	-	31APBAIR30-RPTO	5	
		4	B**08	0	5	5	40	31A1BAIR30-T3	-	-	4	
		1,5	1,1	B**08	0	15	15	25*	-	-	31AP5AIR15-RPTO	6
	PUSH IN OD 4 mm	2	1,8	B**08	0	10	10	25*	-	-	31AP5AIR20-RPTO	6
		2,5	2,5	B**08	0	6	6	25*	-	-	31AP5AIR25-RPTO	6
		3	3,4	B**08	0	5	5	25*	-	-	31AP5AIR30-RPTO	6
1,5		1,1	B**08	0	15	15	25*	-	-	31AP6AIR15-RPTO	6	
PUSH IN OD 6 mm	2	1,8	B**08	0	10	10	25*	-	-	31AP6AIR20-RPTO	6	
	2,5	2,5	B**08	0	6	6	25*	-	-	31AP6AIR25-RPTO	6	
	3	3,4	B**08	0	5	5	25*	-	-	31AP6AIR30-RPTO	6	
	1,5	1,1	B**08	0	15	15	25*	-	-	31AP7AIR15-RPTO	6	
PUSH IN OD 8 mm	2	1,8	B**08	0	10	10	25*	-	-	31AP7AIR20-RPTO	6	
	2,5	2,5	B**08	0	6	6	25*	-	-	31AP7AIR25-RPTO	6	
	3	3,4	B**08	0	5	5	25*	-	-	31AP7AIR30-RPTO	6	

- *Max allowable pressure (PS) 16 bar for domestic applications. Safety factor equal to 5*PS according to EN 60730-2-8.
- *Max allowable pressure (PS) 25 bar for industrial applications.
- 3rd way exhaust Ø2.5 mm
- The use of rigid sealings usually implies a slight leakage, limited within 300 cm³/h at a pressure equal to the MOPD
- For AP series: Coil nut assembly 2 Nm max, armature tube 4 Nm
- The Kv values refer to the orifice and do not take into account any reductions due to the size of the connection pipe
- For tubes: PA and PTFE tolerance max (±0.1)
- Available on request with minimum quantities. Please contact ODE before order.

PIPE	ORIFICE SIZE [mm]	Kv [l/min]	COIL SERIES	PRESSURE [bar]			CODE			DRAWING REF.	
				MIN.	MOPD		BRASS	STAINLESS STEEL	PPS		
					AC	DC					PS
G1/8	1	0,45	B**08	0	20	20	40	31A31HLIR10-T3	-	-	7
		1,1	B**08	0	15	15	25*	-	-	31AP1HLIR15-RPTO	8
	1,5	1,4	B**08	0	15	15	40	31A31HLIR15-T3	-	-	7
		1,8	B**08	0	10	10	25*	-	-	31AP1HLIR20-RPTO	8
	2	2	B**08	0	10	10	40	31A31HLIR20-T3	-	-	7
		2,5	B**08	0	6	6	25*	-	-	31AP1HLIR25-RPTO	8
G1/4	2,5	3,2	B**08	0	6	6	40	31A31HLIR25-T3	-	-	7
		3,4	B**08	0	5	5	25*	-	-	31AP1HLIR30-RPTO	8
	3	4	B**08	0	5	5	40	31A31HLIR30-T3	-	-	7
		1,1	B**08	0	20	20	25*	-	-	31AP2HLIR15-RPTO	8
G1/4	1,5	1,4	B**08	0	20	20	40	31A22HLIR10-T3	-	-	7
		1,8	B**08	0	15	15	40	31A22HLIR15-T3	-	-	7
	2	1,8	B**08	0	15	15	25*	-	-	31AP2HLIR20-RPTO	8
		2	B**08	0	10	10	40	31A22HLIR20-T3	-	-	7
	2,5	2,5	B**08	0	10	10	25*	-	-	31AP2HLIR25-RPTO	8
		3,2	B**08	0	6	6	40	31A22HLIR25-T3	-	-	7
FLANGE CONN.	3	3,4	B**08	0	6	6	25*	-	-	31AP2HLIR30-RPTO	8
		4	B**08	0	5	5	40	31A22HLIR30-T3	-	-	7
	1,5	1,4	B**08	0	15	15	25*	-	-	31APBHLIR15-RPTO	11
		1,8	B**08	0	15	15	40	31A1BHLIR15-T3	-	-	10
PUSH IN OD 4 mm	2	2	B**08	0	10	10	25*	-	-	31APBHLIR20-RPTO	11
		2,5	B**08	0	10	10	40	31A1BHLIR20-T3	-	-	10
	2,5	3,2	B**08	0	6	6	25*	-	-	31APBHLIR25-RPTO	11
		3	B**08	0	6	6	40	31A1BHLIR25-T3	-	-	10
PUSH IN OD 6 mm	3	4	B**08	0	5	5	25*	-	-	31APBHLIR30-RPTO	11
		5	B**08	0	5	5	40	31A1BHLIR30-T3	-	-	10
	1,5	1,1	B**08	0	15	15	25*	-	-	31AP5HLIR15-RPTO	12
		1,8	B**08	0	10	10	25*	-	-	31AP5HLIR20-RPTO	12
PUSH IN OD 8 mm	2,5	2,5	B**08	0	6	6	25*	-	-	31AP5HLIR25-RPTO	12
		3	B**08	0	5	5	25*	-	-	31AP5HLIR30-RPTO	12
	1,5	1,1	B**08	0	15	15	25*	-	-	31AP6HLIR15-RPTO	12
		1,8	B**08	0	10	10	25*	-	-	31AP6HLIR20-RPTO	12
PUSH IN OD 8 mm	2,5	2,5	B**08	0	6	6	25*	-	-	31AP6HLIR25-RPTO	12
		3	B**08	0	5	5	25*	-	-	31AP6HLIR30-RPTO	12
	1,5	1,1	B**08	0	15	15	25*	-	-	31AP7HLIR15-RPTO	12
		1,8	B**08	0	10	10	25*	-	-	31AP7HLIR20-RPTO	12
2,5	2,5	B**08	0	6	6	25*	-	-	31AP7HLIR25-RPTO	12	
	3	B**08	0	5	5	25*	-	-	31AP7HLIR30-RPTO	12	

- **Max allowable pressure (PS) 16 bar for domestic applications. Safety factor equal to 5*PS according to EN 60730-2-8.
- **Max allowable pressure (PS) 25 bar for industrial applications.
- 3rd way exhaust Ø2.5 mm
- The use of rigid sealings usually implies a slight leakage, limited within 300 cm³/h at a pressure equal to the MOPD
- For AP series: Coil nut assembly 2 Nm max, armature tube 4 Nm
- The Kv values refer to the orifice and do not take into account any reductions due to the size of the connection pipe
- For tubes: PA and PTFE tolerance max (±0.1)
- Available on request with minimum quantities. Please contact ODE before order.

I	II	III	IV	V	VI	VII	VIII	IX	X	XI
3	1		A	31	A	1	V	15	-	TO

- I. NUMBER OF WAYS**
3 - 3-way
- II. NUMBER OF ELEMENTS**
1 - 1 element
- III. ARMATURE TUBE MATERIAL**
Blank - std. material
6 - AISI 316 (optional, valid for NC versions, brass or PPS body only)
- IV. SERIES TYPE**
A - brass body
L - StSt body
AL - StSt body with flange connection
AP - PPS body
- V. CONNECTIONS**
For A series *
31 - G1/8
22 - G1/4
For L series *
11 - G1/8
22 - G1/4
- VI. CORE TUBE TYPE**
A - for 3/2 valves exhaust G 1/8 (M)
HL - for 3/2 valves hose conn. exhaust
- VII. PHASE DISP. RING MATERIAL**
0 or blank - copper
1 - gold plated copper
- VIII. SEALING MATERIAL**
V - FKM
R - RUBY
E - EPDM
- IX. ORIFICE Ø MULTIPLIED BY 10**
- X. OPTIONS**
RP - stainless steel orifice
VO - Flange O-RINGS in FKM material and upper sealing in FKM material (only for flanged valves, with R sealing)
V - upper sealing in FKM material (only for valves with RUBY main sealing)
- XI. NSF CERTIFICATION**
For A series
T3 - Low lead brass body
For L, AL series
T4 - StSt body
For AP series
TO - PPS body

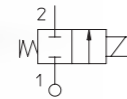
*Push in connections can be made with additional fittings. Please contact ODE for further informations.

OPTION	VALVE TYPE	BODY MATERIAL	SEALING MATERIAL	VALVE SIZE/CONNECTIONS				NOTES
				G1/8	G1/4	FLANGE CONN.	PUSH IN	
RP	3/2 NC	PPS	V, R	X	X	X	X	Ruby sealing is available only with options RP
V	3/2 NC	Brass, StSt	R	X	X	X	X	
VO	3/2 NC	Brass, StSt	R			X		

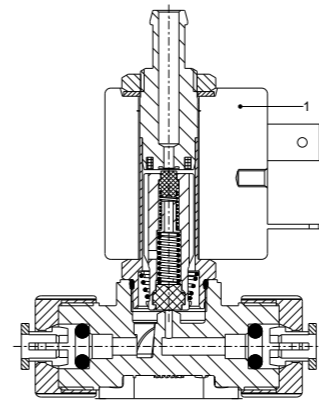
31JN - 31JL - 31JP SERIES

Food Grade NSF - 2-way - direct acting

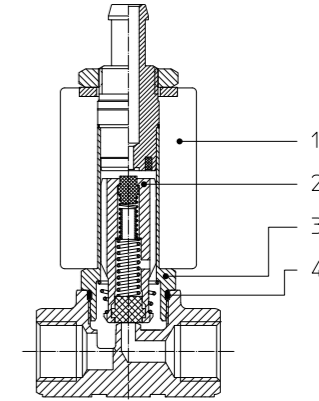
31JN - 31JL - 31JP Series are compact 2-way direct acting valves with 10 mm armature tube. Thanks to a wide range of flow and pressure ratings these valves can be suitable for several applications. The armature tube is made of stainless steel to ensure greater strength and durability to the valve.



3/2 NC, PUSH IN



BRASS, G1/8



Solenoid valves - Food Grade NSF - 2-way - Direct Acting ■ 31JN - 31JL - 31JP SERIES

TECHNICAL DATA

PORT CONNECTION	G1/8 (M and F), plug-in, hose connection, PUSH-IN for OD 4, 6 mm	
SEALING MATERIALS	FKM	EPDM
FLUID TEMPERATURE	-10°C +140°C	-10°C +140°C
FLUIDS	Air, water, steam	
VISCOSITY	12 cSt up to orifice 1.5 mm, 37 cSt for orifice 2.0 mm and above	
TUBE Ø - COIL WIDTH - SERIES	ø 10 mm - 22 mm	LBV05 (class H)
INSTALLATION	as required, preferably with actuator upright	
PROTECTION DEGREE	IP65 EN 60529 (DIN 40050) with plug connector	

MATERIALS

BODY, ORIFICE	Low lead brass, stainless steel AISI 316 or PPS
ARMATURE TUBE	Stainless steel AISI Series 300
FIXED CORE	Stainless steel AISI Series 400
PLUNGER	Stainless steel AISI Series 400
PHASE DISPLACEMENT RING	Copper (Cu 99,9%) or gold plated copper
SPRING	Stainless steel AISI Series 300
SEALING	V=FKM, E=EPDM

■ V = FKM+EPDM for valves with PPS body and PUSH IN connections.

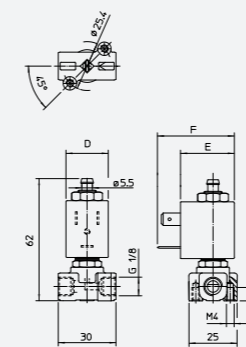
■ **CE**
- 2014/35/EU (LVD)
- 2014/30/EU (EMC)
- 2014/68/EU (PED)
art. 4.3 up to 1"

■ **UL** recognized and **VDE, CSA**
approved coils are available for this series, please refer to coil section.

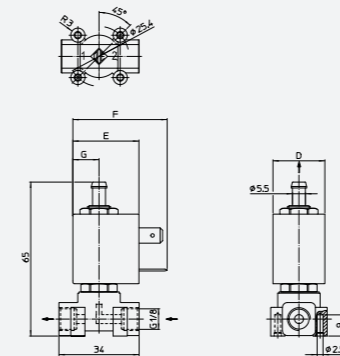
■ **NSF/ANSI 169** certification (Special Food Equipment and Devices) is available for this series. Valves with NSF approval are in compliance with CE regulation 1935/2004.

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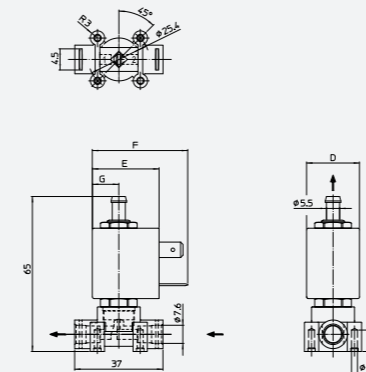
DRAWING 1



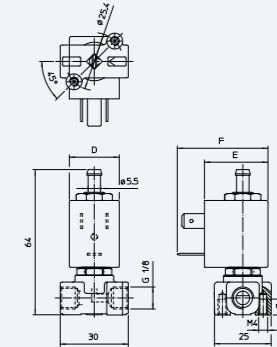
DRAWING 3



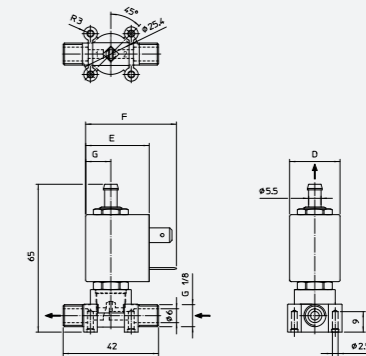
DRAWING 5



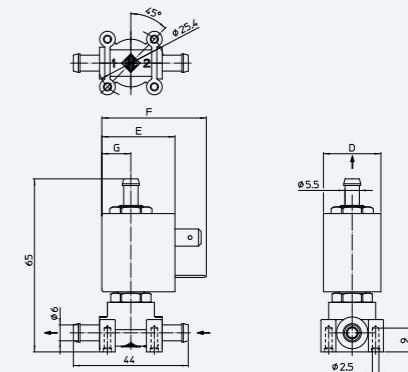
DRAWING 2



DRAWING 4

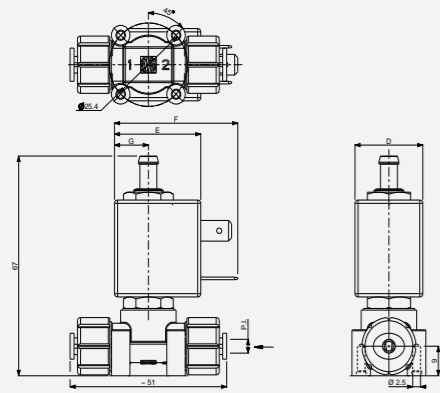


DRAWING 6



■ The fluids listed in the "technical data" tables should be considered as a recommendation. Please check the chemical compatibility of the fluids with the materials of the valve at RFQ stage.
■ G type thread in accordance with ISO 228/1.
■ For spare parts list please refer to the dedicated chapter.

DRAWING 7



COIL SERIES	DIMENSIONS [mm]			
	D	E	F	G
LBV05	22	28±1	39,5	11

I	II	III	IV	V	VI	VII	VIII	IX	X	XI
3	1		JN	1	XP	1	V	12	-	T3

CODIFICATION

I. NUMBER OF WAYS

3 - 3 - way

II. NUMBER OF ELEMENTS

1 - 1 element

III. ARMATURE TUBE MATERIAL

Blank - std
6 - AISI 316 (optional, valid for NC versions, brass and PPS body only)

IV. SERIES

JN - low lead brass body
JL - StSt body
JP - PPS body

V. CONNECTIONS

For JN, JL Series
1 - G 1/8 (F)

For JP Series

1 - G 1/8 (F)
A - G 1/8 (M)
B - Plug in
P - hose connection 6 mm
5 - PUSH IN for OD 4 mm
6 - PUSH IN for OD 6 mm

VI. CORE TUBE TYPE*

XP - 3/2, hose conn., exhaust Ø 1.7 mm
W - 3/2, M5 (F), exhaust Ø 1.7 mm

VII. PHASE DISP. RING MATERIAL

0 - copper
1 - gold plated copper

VIII. SEALING MATERIAL

V - FKM
E - EPDM

IX. ORIFICE Ø [mm] MULTIPLIED BY 10

X. ADDITIONAL LETTER
S - short stroke (optimized for DC)

XI. NSF CERTIFICATION

For JN series
T3 - Low lead brass body
For JL series
T4 - StSt body
For JP series
T0 - PPS body

* Other exhaust diameters and connections available on request.

3/2 NC FKM SEALING HOSE EXHAUST

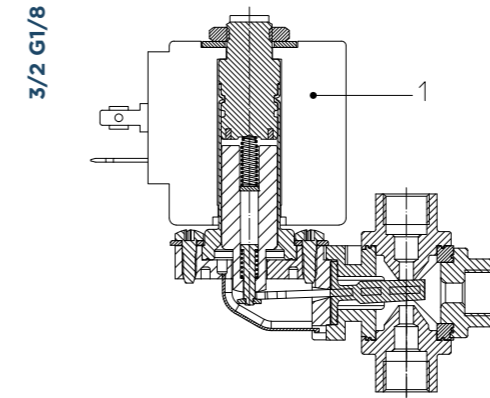
PIPE	ORIFICE SIZE [mm]	Kv [l/min]	COIL SERIES	PRESSURE [bar]			CODE			DRAWING REF.		
				MIN.	MOPD		BRASS	STAINLESS STEEL	PPS			
					AC	DC					PS	
G1/8	1,2	0,6	LBV05	0	15	15	16	-	-	31JP1XP1V12-ST0	3	
		0,65	LBV05	0	15	-	16	-	-	31JP1XP1V12-TO	3	
		0,6	LBV05	0	15	15	40	31JN1XP1V12-ST3	31JL1XP1V12-ST4	-	-	2
		0,65	LBV05	0	15	-	40	31JN1XP1V12-T3	31JL1XP1V12-T4	-	-	2
		1,4	LBV05	0	-	8	40	31JN1XP1V20-ST3	31JL1XP1V20-ST4	-	-	2
	2,3	1,7	LBV05	0	8	-	40	31JN1XP1V20-T3	-	-	-	2
		1,9	LBV05	0	5	5	16	-	-	31JP1XP1V23-ST0	3	
		2,4	LBV05	0	5	-	16	-	-	31JP1XP1V23-TO	3	
		1,9	LBV05	0	5	5	40	31JN1XP1V23-ST3	-	-	-	2
		2,4	LBV05	0	5	-	40	31JN1XP1V23-T3	-	-	-	2
G1/8 (M)	1,2	0,6	LBV05	0	15	15	16	-	-	31JPA1XP1V12-ST0	4	
		0,65	LBV05	0	15	-	16	-	-	31JPA1XP1V12-TO	4	
	2,3	1,9	LBV05	0	5	5	16	-	-	31JPA1XP1V23-ST0	4	
		2,4	LBV05	0	5	-	16	-	-	31JPA1XP1V23-TO	4	
Plug in	1,2	0,6	LBV05	0	15	15	16	-	-	31JPB1XP1V12-ST0	5	
		0,65	LBV05	0	15	-	16	-	-	31JPB1XP1V12-TO	5	
	2,3	1,9	LBV05	0	5	5	16	-	-	31JPB1XP1V23-ST0	5	
		2,4	LBV05	0	5	-	16	-	-	31JPB1XP1V23-TO	5	
Hose conn. Ø 6	1,2	0,6	LBV05	0	15	15	16	-	-	31JPP1XP1V12-ST0	6	
		0,65	LBV05	0	15	-	16	-	-	31JPP1XP1V12-TO	6	
	2,3	1,9	LBV05	0	5	5	16	-	-	31JPP1XP1V23-ST0	6	
		2,4	LBV05	0	5	-	16	-	-	31JPP1XP1V23-TO	6	
PUSH IN OD 4 mm	1,2	0,6	LBV05	0	15	15	16	-	-	31JP5XP1V12-ST0	7	
	2,3	1,9	LBV05	0	5	5	16	-	-	31JP5XP1V23-ST0	7	
PUSH IN OD 6 mm	1,2	0,6	LBV05	0	15	15	16	-	-	31JP6XP1V12-ST0	7	
	2,3	1,9	LBV05	0	5	5	16	-	-	31JP6XP1V23-ST0	7	

- For sealing different from FKM, replace the letter "V" with the ones corresponding to the other seals. V=FKM, E=EPDM
- 3rd way exhaust Ø1.7 mm
- For JP series: For application with steam or with PS > 16 bar please consult our Technical Service
- The Kv values refer to the orifice and do not take into account any reductions due to the size of the connection pipe
- Coil nut assembly 2 Nm max, armature tube 4 Nm
- For tubes: PA and PTFE tolerance max (±0,1)
- Available on request and with minimum quantities

31KP SERIES

Food Grade NSF, Direct Acting

31KP are total separation, lever type solenoid valves. Valves do not require a minimum operating pressure. A large selection of seal materials provides wide chemical compatibility. AC/DC interchangeability of the coil is possible for both NC and NO configurations.



Solenoid Valves ■ General purpose ■ Food Grade NSF ■ **31KP SERIES**

TECHNICAL DATA

PORT CONNECTION	G 1/8 (F), push in OD 8 mm	
SEALING MATERIALS	VMQ	
FLUID TEMPERATURE	+2°C +100°C	
FLUIDS	Air, water, neutral fluids	
VISCOSITY	21 cSt	
TUBE Ø - COIL WIDTH - SERIES	ø 13 mm - 30 mm	BDV08 (class H)
PROTECTION DEGREE	IP65 EN 60529 (DIN 40050) with plug connector	

MATERIALS

BODY, ORIFICE	PSU (polysulphone)	
ARMATURE TUBE	Brass - UNI EN 12164 CW614N	
FIXED CORE	Stainless steel AISI series 400	
PLUNGER	Stainless steel AISI series 400	
PHASE DISPLACEMENT RING	Copper	
SPRING	Stainless steel AISI series 300	
SEALING	S= VMQ	
MOUNTING BRACKET	Stainless steel AISI 304	

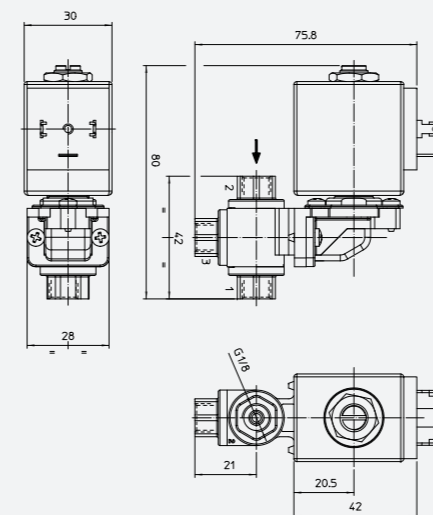
▪ **CE**
- 2014/35/EU (LVD)
- 2014/30/EU (EMC)
- 2014/68/EU (PED)
art. 4.3 up to 1"

▪ **UL** recognized and **VDE, CSA**
approved coils are available for this series, please refer to coil section.

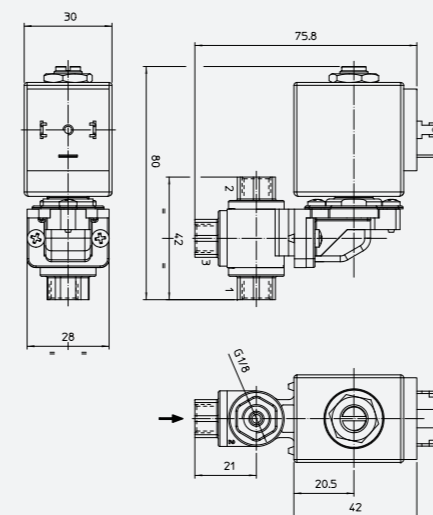
▪ **NSF/ANSI 169** certification (Special Food Equipment and Devices) is available for this series, Valves with NSF approval are in compliance with CE regulation 1935/2004.

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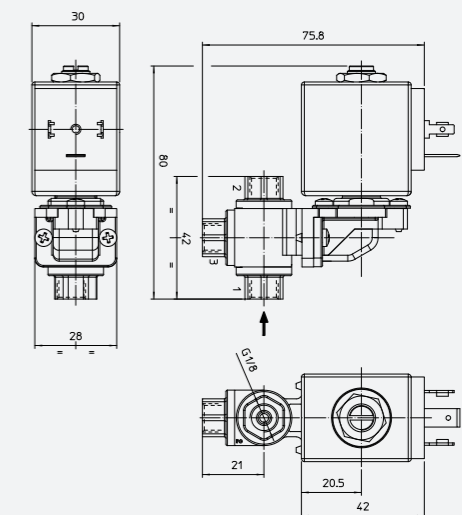
DRAWING 1



DRAWING 3



DRAWING 2



▪ The fluids listed in the "technical data" tables should be considered as a recommendation. Please check the chemical compatibility of the fluids with the materials of the valve at RFQ stage.
▪ G type thread in accordance with ISO 228/1.
▪ For spare parts list please refer to the dedicated chapter.

3/2 NC

PIPE	ORIFICE SIZE Ø [mm]	Kv [l/min]	COIL SERIES	PRESSURE [bar]			CODE	DRAWING REFERENCE	
				MIN	MOPD				PS
					AC	DC			
G1/8	3	4,5	B**08	0	1	1	8	31KPCF1KRS30-T0	1

- Max torque for fittings assembly 2 Nm
- In case glue is used to seal the fittings, verify the compatibility with body material

3/2 NO

PIPE	ORIFICE SIZE Ø [mm]	Kv [l/min]	COIL SERIES	PRESSURE [bar]			CODE	DRAWING REFERENCE	
				MIN	MOPD				PS
					AC	DC			
G1/8	3	4,5	B**08	0	2	2	8	31KPAF1KRS30-T0	2

- Max torque for fittings assembly 2 Nm
- In case glue is used to seal the fittings, verify the compatibility with body material

3/2 DIST.

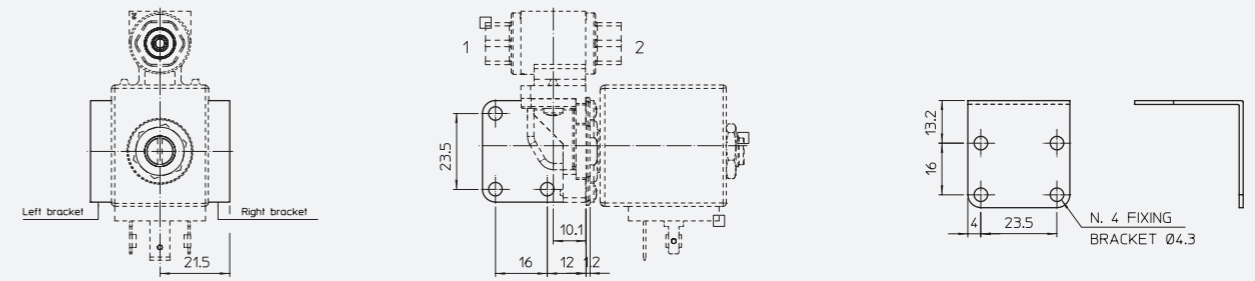
PIPE	ORIFICE SIZE Ø [mm]	Kv [l/min]	COIL SERIES	PRESSURE [bar]			CODE	DRAWING REFERENCE	
				MIN	MOPD				PS
					AC	DC			
G1/8	3	4,5	B**08	0	6	4	8	31KPDF1KRS30-T0	3

- Max torque for fittings assembly 2 Nm
- In case glue is used to seal the fittings, verify the compatibility with body material

I	II	III	IV	V	VI	VII	VIII	IX	X
3	1	KP	C	F1	KR	S	30	-	T0

CODIFICATION

- I. NUMBER OF WAYS**
3 - 3 - way
- II. NUMBER OF ELEMENTS**
1 - number of elements
- III. SERIES**
KP - total separation, lever valves
- IV. FUNCTION**
C - NC
A - NA
D - Distribution
- V. CONNECTIONS**
F1 - G1/8 (F)
- VI. CORE TUBE TYPE**
KR - Ø13 mm
- VII. SEALING MTERIAL**
S - VMQ
- VIII. ORIFICE Ø [mm] MULTIPLIED BY 10**
- IX. OPTIONS**
LD - mounting bracket on "right" side
LS - mounting bracket on "left" side
- X. NSF CERTIFICATION**
T0 - PSU body



2 PROCESS VALVES & COMPONENTS

2-WAY

PNEUMATIC VALVES

ANGLE SEAT VALVES

21IZ1 SERIES	145
21EZ1 SERIES	153
21IA SERIES	155

MODULAR VALVES

21IZ3 SERIES	159
--------------	-----

COAXIAL VALVES

21SH SERIES	163
-------------	-----

ASEPTIC DIAPHRAGM VALVES

21DZ1 SERIES	167
--------------	-----

MANUAL VALVES

ASEPTIC DIAPHRAGM VALVES

21DZ2 SERIES	171
--------------	-----

SELF ACTUATED VALVES

PRESSURE REDUCERS

R SERIES	175
----------	-----

FILTER PRESSURE REDUCERS

FR SERIES	177
-----------	-----

OVERFLOW VALVES

S SERIES	179
----------	-----

2-WAY

SOLENOID VALVES FOR GAS APPLIANCES

VALVES FOR GAS APPLIANCES

MDO SERIES	181
MD1 SERIES	185
MD2 SERIES	189

FILTERS

"Y" FILTERS

FIL100 SERIES	193
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ACCESSORIES

ELECTRICAL POSITION INDICATOR

P SERIES	195
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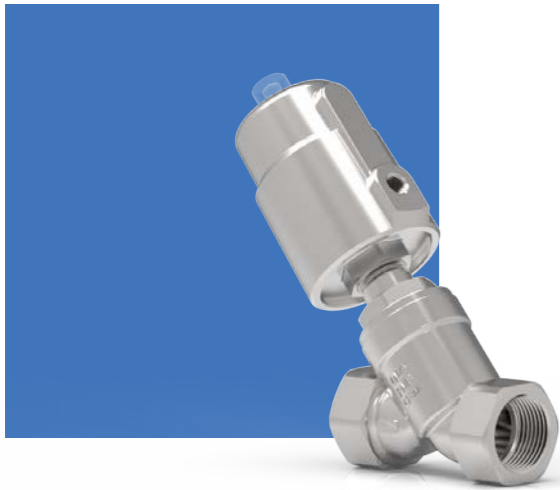
SOLENOID PILOT

31JNX-31JLX SERIES	197
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21IZ1 SERIES

Pneumatic Valves, Angle seat valves

- 21IZ1** are pneumatically actuated angle seat valves that come with:
- optimized body design for high flow rate
 - optimized body design that reduces water hammer effects (below seat versions)
 - corrosion resistant, stainless steel body and actuator housing
 - optical position indicator
 - self adjusting stem packing for long service life
 - 360° adjustable actuator
 - wide range of process connections



TECHNICAL DATA

PIPES	Threaded G 3/8 ÷ 3	Welded DN15 ÷ DN80	Tri-Clamp DN15 ÷ DN80	Flanged DN15 ÷ DN100
ACTUATOR SIZE	Ø 40 ÷ 125 mm			
FLOW DIRECTION	below seat or above seat			
CONTROL TYPE	single acting normally open, normally closed and double acting			
FLUID TEMPERATURE	-10°C +180°C			
AMBIENT TEMPERATURE	-10°C +80°C			
VISCOSITY	max 600 cSt			
PILOT FLUID	air, inert gases			
PILOT FLUID TEMPERATURE	max +80°C			

MATERIALS

VALVE BODY	stainless steel AISI 316 or AISI 304
MAIN SEAL	PTFE
STEM PACKING	PTFE, PTFE+CARBON, PEEK
ACTUATOR HOUSING	stainless steel AISI 304 up to Ø 90 mm, aluminum for Ø 125 mm
ACTUATOR GASKETS	FKM

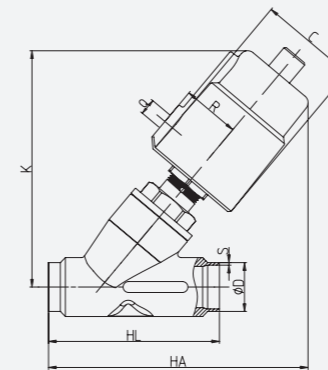
• **CE**
- 2014/68/EU (PED)
up to 1" - art. 4.3
above 1" up to 2" - cat. I module A
above 2" - cat. I module A (use only with gases of Group 2 or liquids)

- 2014/34/EU (ATEX) Available on request.
Refer to next pages for the complete marking

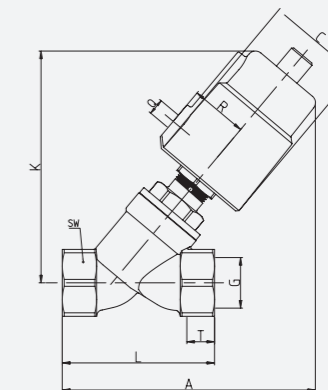
▪ Special version with materials in contact with process fluid compliant with **EC Reg. 1935/2004** available on request

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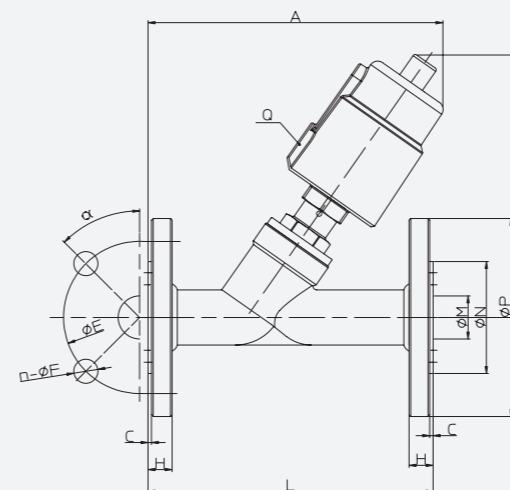
WELDED CONNECTIONS



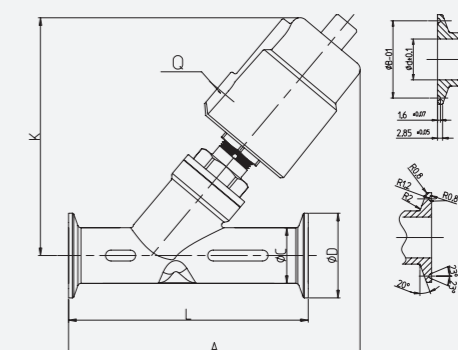
THREADED CONNECTIONS



FLANGED CONNECTIONS



TRI-CLAMP CONNECTIONS



▪ Please check the compatibility of the fluids in contact with the materials at RFQ stage.
▪ For pilot valve please refer to accessories Section of Chapter 2.

▪ Welded connections in accordance with DIN 11850-2 or DIN 11850-3.
▪ Threaded connections in accordance with ISO 228/1 or EN 10226.
▪ Flanges in accordance with DIN 2576 (PN16) or ASME B16.5 (class ANSI 150).
▪ Tri-Clamp connections in accordance with ISO 2852.

WELDED CONNECTIONS

DN	ACTUATOR [mm]	HA [mm]	K [mm]	HL [mm]	ØD [mm]		S [mm]		C [mm]	R [mm]	Q
					DIN11850-2	DIN11850-3	DIN11850-2	DIN11850-3			
DN15	40	118	112	70	19	20	1,5	2	50,5	27	1/8
DN15	50	128	125	70	19	20	1,5	2	60	33	1/8
DN20	50	135	132	82	23	24	1,5	2	60	33	1/8
DN25	50	150	136	100	29	30	1,5	2	60	33	1/8
DN25	63	175	162	100	29	30	1,5	2	75	41	1/8
DN32	63	186	174	125	35	36	1,5	2	75	41	1/8
DN32	90	232	223	125	35	36	1,5	2	106	55	1/8
DN40	63	190	175	130	41	42	1,5	2	75	41	1/8
DN40	90	235	223	130	41	42	1,5	2	106	55	1/8
DN50	63	206	183	155	53	54	1,5	2	75	41	1/8
DN50	90	250	232	155	53	54	1,5	2	106	55	1/8
DN50	125	307	300	155	53	54	1,5	2	170	85	1/4
DN65 SQC	90	320	280	270	70			2	106	55	1/8
DN65 SQC	125	360	330	270	70			2	170	85	1/4
DN80 SQC	125	360	355	284	85			2	170	85	1/4

FLANGED CONNECTIONS

DN	ACTUATOR [mm]	A [mm]	B [mm]	L [mm]	C [mm]		H [mm]		ØM [mm]	ØN [mm]		ØP [mm]		ØE [mm]		N-ØF [mm]		α		Q
					DIN	ANSI	DIN	ANSI		DIN	ANSI	DIN	ANSI	DIN	ANSI	DIN	ANSI	DIN	ANSI	
DN15	40	135	125	130	2	1,5	14	14	16	45	35	95	90	65	60,5	4-14	4-15,8	45°	45°	1/8
DN15	50	145	140	130	2	1,5	14	14	16	45	35	95	90	65	60,5	4-14	4-15,8	45°	45°	1/8
DN20	50	165	140	150	2	1,5	14	14,5	19	56	43	105	98,5	75	69,85	4-14	4-15,8	45°	45°	1/8
DN25	50	170	145	160	2	1,5	14	16	26	65	50,8	115	110	85	79,25	4-14	4-15,8	45°	45°	1/8
DN25	63	190	175	160	2	1,5	14	16	26	65	50,8	115	110	85	79,25	4-14	4-15,8	45°	45°	1/8
DN32	63	190	188	180	2	1,5	16	17,5	31	78	63,5	140	117	100	88,9	4-18	4-15,8	45°	45°	1/8
DN32	90	230	235	180	2	1,5	16	17,5	31	78	63,5	140	117	100	88,9	4-18	4-15,8	45°	45°	1/8
DN40	63	206	190	200	3	1,5	16	19,5	38	84	73	150	127	110	98,55	4-18	4-15,8	45°	45°	1/8
DN40	90	250	240	200	3	1,5	16	19,5	38	84	73	150	127	110	98,55	4-18	4-15,8	45°	45°	1/8
DN50	63	235	195	230	3	1,5	16	20,5	49	100	92	165	150	125	120,65	4-18	4-19,0	45°	45°	1/8
DN50	90	277	245	230	3	1,5	16	20,5	49	100	92	165	150	125	120,65	4-18	4-19,0	45°	45°	1/8
DN50	125	330	310	230	3	1,5	16	20,5	49	100	92	165	150	125	120,65	4-18	4-19,0	45°	45°	1/4
DN65 SQC	90	330	280	290	3	1,5	18	24	66	120	105	185	178	145	139,7	4-18	4-19,0	45°	45°	1/8
DN65 SQC	125	375	330	290	3	1,5	18	24	66	120	105	185	178	145	139,7	4-18	4-19,0	45°	45°	1/4
DN80 SQC	125	380	355	310	3	1,5	20	25,5	78	135	127	200	190,5	160	152,4	8-18	4-19,0	22,5°	45°	1/4
DN100	125	420	395	350	3	1,5	20	25,5	96	155	157	215	229	180	190,5	8-18	8-19,0	22,5°	22,5°	1/4

THREADED CONNECTIONS

DN	ACTUATOR [mm]	PIPE	A [mm]	K [mm]	L [mm]	T [mm]	C [mm]	R [mm]	Q	CH
DN10	40	3/8	124	112	68	12	50,5	27	1/8	27
DN10	50	3/8	135	125	68	12	60	33	1/8	27
DN15	40	1/2	124	112	68	15	50,5	27	1/8	27
DN15	50	1/2	135	125	68	15	60	33	1/8	27
DN20	50	3/4	140	132	75	16	60	33	1/8	32
DN25	50	1	150	136	90	17	60	33	1/8	40
DN25	63	1	172	162	90	17	75	41	1/8	40
DN32	63	1 1/4	190	174	116	21	75	41	1/8	50
DN32	90	1 1/4	235	223	116	21	106	55	1/8	50
DN40	63	1 1/2	190	175	116	21	75	41	1/8	56
DN40	90	1 1/2	235	223	116	21	106	55	1/8	56
DN50	63	2	205	183	138	22	75	41	1/8	69
DN50	90	2	250	232	138	22	106	55	1/8	69
DN50	125	2	305	300	138	22	170	85	1/4	69
DN65 SQC	90	2 1/2	275	280	178	26	106	55	1/8	85
DN65 SQC	125	2 1/2	320	330	178	26	170	85	1/4	85
DN80 SQC	125	3	340	355	210	27	170	85	1/4	100

TRI-CLAMP CONNECTIONS

DN	ACTUATOR [mm]	A [mm]	K [mm]	L [mm]	ØC [mm]	Ød [mm]	ØD [mm]	B [mm]	Q
DN15	40	130	115	80	19	15	34	27,5	1/8"
DN15	50	140	126	80	19	15	34	27,5	1/8"
DN20	50	158	148	130	25	19	50,5	43,5	1/8"
DN25	50	165	140	130	32	27	50,5	43,5	1/8"
DN25	63	188	166	130	32	27	50,5	43,5	1/8"
DN32	63	200	174	146	37	31	50,5	43,5	1/8"
DN32	90	245	223	146	37	31	50,5	43,5	1/8"
DN40	63	210	175	160	40	33	64	56,5	1/8"
DN40	90	255	223	160	40	33	64	56,5	1/8"
DN50	63	221	185	175	53	45	64	56,5	1/8"
DN50	90	265	235	175	53	45	64	56,5	1/8"
DN50	125	325	296	175	53	45	64	56,5	1/4"
DN65 SQC	90	325	280	278	75	66	91	83,5	1/8"
DN65 SQC	125	360	330	278	75	66	91	83,5	1/4"
DN80 SQC	125	360	352	290	89	78	106	97	1/4"
DN65 SQC	90	2 1/2	275	280	178	26	106	55	1/8
DN65 SQC	125	2 1/2	320	330	178	26	170	85	1/4
DN80 SQC	125	3	340	355	210	27	170	85	1/4

2/2 NC - ABOVE SEAT

SIZE	PIPE	ORIFICE SIZE		Kv	Kv	ACTUATOR	ACTUATOR PILOT PRESSURE [bar]		DIFFERENTIAL PRESSURE [bar]		MAX ALLOWABLE PRESSURE [bar]	CODE
		Ø [mm]	[m ³ /h]				MIN	MAX	MIN	MAX		
DN10	3/8"	13	3,9	65,0	40	3,0	4,5	0	16,0	16	21I2ICS1ATT0101**	
					50	3,0	3,5	0	16,0	16	21I2IDS1ATT0101**	
DN15	1/2"	13	4,3	71,7	40	3,0	4,5	0	16,0	16	21I2ICS1ATT0151**	
					50	3,0	3,5	0	16,0	16	21I2IDS1ATT0151**	
DN20	3/4"	18	7,6	126,7	50	3,0	4,0	0	16,0	16	21I2IDS1ATT0201**	
DN25	1"	24	15,8	263,3	50	3,0	4,5	0	16,0	16	21I2IDS1ATT0251**	
					63	3,0	3,5	0	16,0	16	21I2IES1ATT0251**	
DN32	1 1/4"	31	26	433,3	63	3,0	5,5	0	16,0	16	21I2IES1ATT0321**	
					90	2,0	3,5	0	16,0	16	21I2IFS1ATT0321**	
DN40	1 1/2"	35	32	533,3	63	3,0	6,5	0	16,0	16	21I2IES1ATT0401**	
					90	3,0	4,0	0	16,0	16	21I2IFS1ATT0401**	
DN50	2"	45	52	866,7	63	3,0	7,0	0	9,0	16	21I2IES1ATT0501**	
					90	3,0	4,5	0	16,0	16	21I2IFS1ATT0501**	
					125	3,0	4,0	0	16,0	16	21I2IGA1ATT0501**	
DN65	2 1/2"	61	83,2	1386,7	90	3,0	6,0	0	10,0	16	21I2IFS1ATT0651**	
					125	3,0	4,0	0	16,0	16	21I2IGA1ATT0651**	
DN80	3"	80	119	1983,3	125	3,0	7,0	0	12,0	16	21I2IGA1ATT0801**	

2/2 NC - BELOW SEAT

SIZE	PIPE	ORIFICE SIZE		Kv	Kv	ACTUATOR	ACTUATOR PILOT PRESSURE [bar]		DIFFERENTIAL PRESSURE [bar]		MAX ALLOWABLE PRESSURE [bar]	CODE
		Ø [mm]	[m ³ /h]				MIN	MAX	MIN	MAX		
DN10	3/8"	13	3,9	65,0	40	4,0	8,0	0	13,0	16	21I2ICS1ATT0102**	
					50	4,5	8,0	0	14,0	16	21I2IDS1ATT0102**	
DN15	1/2"	13	4,3	71,7	40	4,0	8,0	0	13,0	16	21I2ICS1ATT0152**	
					50	4,5	8,0	0	14,0	16	21I2IDS1ATT0152**	
DN20	3/4"	18	7,6	126,7	50	4,5	8,0	0	14,0	16	21I2IDS1ATT0202**	
DN25	1"	24	15,8	263,3	50	4,5	8,0	0	8,0	16	21I2IDS1ATT0252**	
					63	5,0	8,0	0	13,0	16	21I2IES1ATT0252**	
DN32	1 1/4"	31	26	433,3	63	5,0	8,0	0	6,0	16	21I2IES1ATT0322**	
					90	6,0	8,0	0	16,0	16	21I2IFS1ATT0322**	
DN40	1 1/2"	35	32	533,3	63	5,0	8,0	0	5,0	16	21I2IES1ATT0402**	
					90	6,0	8,0	0	16,0	16	21I2IFS1ATT0402**	
DN50	2"	45	52	866,7	63	5,0	8,0	0	2,0	16	21I2IES1ATT0502**	
					90	6,0	8,0	0	10,0	16	21I2IFS1ATT0502**	
					125	5,5	8,0	0	16,0	16	21I2IGA1ATT0502**	
DN65	2 1/2"	61	83,2	1386,7	90	6,0	8,0	0	5,0	16	21I2IFS1ATT0652**	
					125	5,5	8,0	0	9,0	16	21I2IGA1ATT0652**	
DN80	3"	80	119	1983,3	125	5,5	8,0	0	5,0	16	21I2IGA1ATT0802**	
DN100	4"	90	132	2200,0	125	5,5	8,0	0	2,5	16	21I2IGA1ATT1002**	

2/2 NO - ABOVE SEAT

SIZE	PIPE	ORIFICE SIZE		Kv	Kv	ACTUATOR	ACTUATOR PILOT PRESSURE [bar]		DIFFERENTIAL PRESSURE [bar]		MAX ALLOWABLE PRESSURE [bar]	CODE
		Ø [mm]	[m ³ /h]				MIN	MAX	MIN	MAX		
DN10	3/8"	13	3,9	65,0	40	3,0	8,0	0	16,0	16	21I2ICSOATT0101**	
					50	3,0	8,0	0	16,0	16	21I2IDSOATT0101**	
DN15	1/2"	13	4,3	71,7	40	3,0	8,0	0	16,0	16	21I2ICSOATT0151**	
					50	3,0	8,0	0	16,0	16	21I2IDSOATT0151**	
DN20	3/4"	18	7,6	126,7	50	3,0	8,0	0	12,0	16	21I2IDSOATT0201**	
DN25	1"	24	15,8	263,3	50	3,0	8,0	0	3,0	16	21I2IDSOATT0251**	
					63	4,5	8,0	0	16,0	16	21I2IESOATT0251**	
DN32	1 1/4"	31	26	433,3	63	4,5	8,0	0	14,0	16	21I2IESOATT0321**	
DN40	1 1/2"	35	32	533,3	63	4,5	8,0	0	14,0	16	21I2IESOATT0401**	
DN50	2"	45	52	866,7	63	4,5	8,0	0	6,0	16	21I2IGA0ATT0501**	

2/2 NO - BELOW SEAT

SIZE	PIPE	ORIFICE SIZE		Kv	Kv	ACTUATOR	ACTUATOR PILOT PRESSURE [bar]		DIFFERENTIAL PRESSURE [bar]		MAX ALLOWABLE PRESSURE [bar]	CODE
		Ø [mm]	[m ³ /h]				MIN	MAX	MIN	MAX		
DN10	3/8"	13	3,9	65,0	40	3,0	5,0	0	16,0	16	21I2ICSOATT0102**	
					50	3,0	4,0	0	16,0	16	21I2IDSOATT0102**	
DN15	1/2"	13	4,3	71,7	40	3,0	5,0	0	16,0	16	21I2ICSOATT0152**	
					50	3,0	4,0	0	16,0	16	21I2IDSOATT0152**	
DN20	3/4"	18	7,6	126,7	50	3,0	6,0	0	16,0	16	21I2IDSOATT0202**	
DN25	1"	24	15,8	263,3	50	3,0	6,0	0	13,0	16	21I2IDSOATT0252**	
					63	3,0	5,0	0	16,0	16	21I2IESOATT0252**	
DN32	1 1/4"	31	26	433,3	63	3,0	6,0	0	13,0	16	21I2IESOATT0322**	
DN40	1 1/2"	35	32	533,3	63	3,0	6,0	0	7,0	16	21I2IESOATT0402**	
					90	3,0	3,5	0	16,0	16	21I2IFS0ATT0402**	
DN50	2"	45	52	866,7	63	3,0	6,0	0	5,0	16	21I2IESOATT0502**	
					90	3,0	6,0	0	12,0	16	21I2IFS0ATT0502**	
DN65	2 1/2"	61	83,2	1386,7	90	3,0	5,0	0	7,5	16	21I2IFS0ATT0652**	
					125	3,0	7,0	0	14,0	16	21I2IGA0ATT0652**	
DN80	3"	80	119	1983,3	125	3,0	7,0	0	12,0	16	21I2IGA0ATT0802**	

** replace with process connections digits, please refer to codification table.

** replace with process connections digits, please refer to codification table.

2/2 DE - ABOVE SEAT

SIZE	PIPE	ORIFICE SIZE		Kv	Kv	ACTUATOR	ACTUATOR PILOT PRESSURE [bar]		DIFFERENTIAL PRESSURE [bar]		MAX ALLOWABLE PRESSURE [bar]	CODE
		Ø [mm]	[m ³ /h]				[l/min]	Ø [mm]	MIN	MAX		
DN10	3/8"	13	3,9	65,0	40	3,0	4,5	0	16,0	16	21I2ICS3ATT0101**	
						50	3,0	3,5	0	16,0	16	21I2IDS3ATT0101**
DN15	1/2"	13	4,3	71,7	40	3,0	4,5	0	16,0	16	21I2ICS3ATT0151**	
						50	3,0	3,5	0	16,0	16	21I2IDS3ATT0151**
DN20	3/4"	18	7,6	126,7	50	3,0	4,0	0	16,0	16	21I2IDS3ATT0201**	
						63	3,0	4,5	0	16,0	16	21I2IDS3ATT0251**
DN25	1"	24	15,8	263,3	50	3,0	4,5	0	16,0	16	21I2IDS3ATT0251**	
						63	3,0	3,5	0	16,0	16	21I2IES3ATT0251**
DN32	1 1/4"	31	26	433,3	63	3,0	5,5	0	16,0	16	21I2IES3ATT0321**	
						90	3,0	4,0	0	16,0	16	21I2IFS3ATT0321**
DN40	1 1/2"	35	32	533,3	63	3,0	6,5	0	16,0	16	21I2IES3ATT0401**	
						90	3,0	4,0	0	16,0	16	21I2IFS3ATT0401**
DN50	2"	45	52	866,7	90	3,0	7,0	0	10,0	16	21I2IES3ATT0501**	
						125	3,0	4,5	0	16,0	16	21I2IFS3ATT0501**
DN65	2 1/2"	61	83,2	1386,7	90	3,0	6,0	0	10,0	16	21I2IFS3ATT0651**	
						125	3,0	4,0	0	16,0	16	21I2IGA3ATT0651**
DN80	3"	80	119	1983,3	125	3,0	7,0	0	12,0	16	21I2IGA3ATT0801**	

2/2 DE - BELOW SEAT

SIZE	PIPE	ORIFICE SIZE		Kv	Kv	ACTUATOR	ACTUATOR PILOT PRESSURE [bar]		DIFFERENTIAL PRESSURE [bar]		MAX ALLOWABLE PRESSURE [bar]	CODE
		Ø [mm]	[m ³ /h]				[l/min]	Ø [mm]	MIN	MAX		
DN10	3/8"	13	3,9	65,0	40	3,0	4,0	0	16,0	16	21I2ICS3ATT0102**	
						50	3,0	4,0	0	16,0	16	21I2IDS3ATT0102**
DN15	1/2"	13	4,3	71,7	40	3,0	4,0	0	16,0	16	21I2ICS3ATT0152**	
						50	3,0	4,0	0	16,0	16	21I2IDS3ATT0152**
DN20	3/4"	18	7,6	126,7	50	3,0	4,0	0	16,0	16	21I2IDS3ATT0202**	
						63	3,0	6,5	0	16,0	16	21I2IDS3ATT0252**
DN25	1"	24	15,8	263,3	50	3,0	6,5	0	16,0	16	21I2IDS3ATT0252**	
						63	3,0	5,5	0	16,0	16	21I2IES3ATT0252**
DN32	1 1/4"	31	26	433,3	63	3,0	7,0	0	16,0	16	21I2IES3ATT0322**	
						90	3,0	4,5	0	16,0	16	21I2IFS3ATT0322**
DN40	1 1/2"	35	32	533,3	63	3,0	7,5	0	12,0	16	21I2IES3ATT0402**	
						90	3,0	5,0	0	16,0	16	21I2IFS3ATT0402**
DN50	2"	45	52	866,7	90	3,0	7,5	0	4,0	16	21I2IES3ATT0502**	
						125	3,0	4,0	0	16,0	16	21I2IGA3ATT0502**
DN65	2 1/2"	61	83,2	1386,7	90	3,0	6,0	0	16,0	16	21I2IFS3ATT0652**	
						125	3,0	6,0	0	16,0	16	21I2IGA3ATT0652**
DN80	3"	80	119	1983,3	125	3,0	7,0	0	10,0	16	21I2IGA3ATT0802**	
DN100	4"	90	132	2200,0	125	3,0	7,5	0	8,0	16	21I2IGA3ATT1002**	

** replace with process connections digits, please refer to codification table.

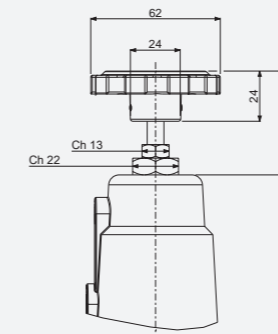


- I. NUMBER OF WAYS**
2 - 2 - way
- II. NUMBER OF ELEMENTS**
1 - 1 element
- III. SERIES**
IZ1 - ASV IZ1 Series
- IV. ACTUATOR**
CS - 40 mm
DS - 50 mm
ES - 63 mm
FS - 90 mm
GA - 125 mm
- V. PILOT FUNCTION**
0 - NO
1 - NC
3 - Double Acting
- VI. BODY MATERIAL**
A - AISI 316
B - AISI 304
- VII. SEAT SEALING MATERIAL**
T - PTFE
- VIII. STEM PACKING MATERIAL**
T - PTFE
P - PEEK®
- IX. NOMINAL DIAMETER**
010
015
020
025
032
040
050
065
080
- X. FLOW DIRECTION**
1 - Above Seat
2 - Below Seat
- XI. PROCESS CONNECTIONS**
BP - BSP
BT - BSPT
CL - Tri- Clamp ISO 2852
FA - Flange ASME B16.5
FL - Flange DIN 2576
W2 - Welded DIN 11850-2
W3 - Welded DIN 11850-3
- XII. OPTIONS**
A - ATEX Version
P - Electrical Position Indicator
S - Stroke Limiter

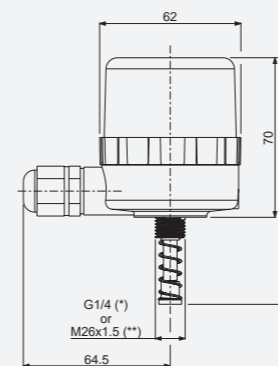
* Available on request

OPTION	VALVE TYPE	ACTUATOR SIZE					NOTES
		40 mm	50 mm	63 mm	90 mm	125 mm	
A	2/2 NC, NO, DE	X	X	X	X	X	
P	2/2 NC, NO, DE	X	X	X	X	X	Available also as stand alone part, please refer to accessories chapter
S	2/2 NC, NO, DE		X	X	X		Available only pre-assembled on the valve

Ex According to Directive 2014/34/EU ATEX
 II 2G Ex h IIC T6...T3 Gb
 II 2D Ex h IIC T80°C...T180°C Db
 (-10 °C ≤ Tamb ≤ 80°C)



The **Stroke Limiter** is a device that can be installed on all pneumatic angle seat valve. Its function is to influence the plug's position by limiting the stroke of the valve and consequently by adjusting the flow rate. In case of lack of pilot pressure or due to other breakdowns, it acts as a manual emergency override.



The **Electrical Position Indicator** is an accessory to be assembled on pneumatic angle seat valves series 21I21 / 21I23. This device, mounted directly on the valve's actuator, allows to monitor the relative opening and closing status through a local visual control (LEDs) or remotely via electrical signal. It can be supplied individually as an accessory or already preassembled on the valve.

(*) Pipe connection G 1/4 for actuators 40, 50, 63, 90 mm
 (**) Pipe connection M26x1,5 for actuators 125 mm

CODIFICATION

OPTIONS AVAILABILITY

21EZ1 SERIES

Pneumatic valves, Angle seat valves

21EZ1 are pneumatically actuated angle seat valves that come with:

- compact design
- optimized body design for high flow rate
- AISI 304 Stainless steel body
- Double acting with spring (NC) actuator
- Self positioning plug to ensure the best seal



TECHNICAL DATA

PIPES	G 3/8 ÷ 2
ACTUATOR SIZE	∅ 32 ÷ 63 mm
FLOW DIRECTION	above seat
CONTROL TYPE	double acting with spring
FLUID TEMPERATURE	-10°C + 120°C
AMBIENT TEMPERATURE	-10°C + 80°C
VISCOSITY	max 600 cSt
PILOT FLUID	air, inert gases
PILOT FLUID TEMPERATURE	max +80°C

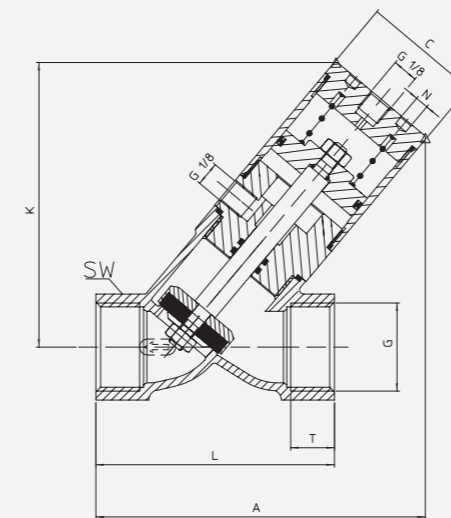
MATERIALS

VALVE BODY	stainless steel AISI 304
MAIN SEAL	PTFE
STEM PACKING	FKM
ACTUATOR HOUSING	anodized aluminum
ACTUATOR GASKETS	FKM

2/2 DOUBLE ACTING WITH SPRING

SIZE	PIPE	ORIFICE SIZE		Kv	Kv	ACTUATOR	ACTUATOR PILOT PRESSURE [bar]		DIFFERENTIAL PRESSURE [bar]		MAX ALLOWABLE PRESSURE [bar]	CODE
		∅ [mm]	[m³/h]				[l/min]	∅ [mm]	MIN	MAX		
DN10	3/8"	13	2,9	48	32	3	6	0	10	16	21EZ1BS2BT V0101**	
DN15	1/2"	13	3,5	59	32	3	6	0	10	16	21EZ1BS2BT V0151**	
DN20	3/4"	18	7,1	119	32	3	6	0	10	16	21EZ1BS2BT V0201**	
DN25	1"	24	13,6	226	40	3	6	0	10	16	21EZ1CS2BT V0251**	
DN32	1 1/4"	31	17,3	289	50	3	6	0	10	16	21EZ1DS2BT V0321**	
DN40	1 1/2"	35	24,7	411	50	3	7	0	10	16	21EZ1DS2BT V0401**	
DN50	2"	45	39,6	660	63	3	7	0	10	16	21EZ1ES2BT V0501**	

• **CE**
 - 2014/68/EU (PED)
 up to 1" - art. 4.3
 above 1" - cat. I module A
 - 2014/34/EU (ATEX) Available on request.
 Refer to next pages for the complete marking



DN	PIPE	A [mm]	C [mm]	K [mm]	L [mm]	N [mm]	T [mm]	SW [mm]
DN10	3/8"	112	38	99	68	5	12	27
DN15	1/2"	112	38	99	68	5	15	27
DN20	3/4"	118	38	105	75	5	16	32
DN25	1"	125	45	110	90	5	17	40
DN32	1 1/4"	156	55	135	116	5	21	50
DN40	1 1/2"	158	55	138	116	5	21	56
DN50	2"	190	69	160	138	5	22	69



- | | | |
|--|---|---|
| <p>I. NUMBER OF WAYS
2 - 2 - way</p> <p>II. NUMBER OF ELEMENTS
1 - 1 element</p> <p>III. SERIES
EZ1 - ASV EZ1 Seriesdy</p> <p>IV. ACTUATOR
BS - 32 mm
CS - 40 mm
DS - 50 mm
ES - 63 mm</p> <p>V. PILOT FUNCTION
2 - Double Acting with Spring</p> | <p>VI. BODY MATERIAL
B - AISI 304</p> <p>VII. SEAT SEALING MATERIAL
T - PTFE</p> <p>VIII. STEM PACKING MATERIAL
V - FKM</p> <p>IX. NOMINAL DIAMETER
010
015
020
025
032
040
050</p> | <p>X. FLOW DIRECTION
1 - Above Seat</p> <p>XI. PROCESS CONNECTIONS
BP - BSP
BT - BSPT</p> <p>XII. OPTIONS
A - ATEX Version</p> |
|--|---|---|



According to Directive 2014/34/EU ATEX
 II 2G Ex h IIC T6...T3 Gb
 II 2D Ex h IIC T80°C...T180°C Db
 (-10 °C ≤ Tamb ≤ 80°C)

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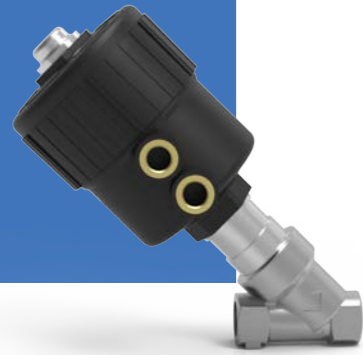
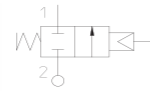
CODIFICATION

■ Please check the compatibility of the fluids in contact with the materials at RFQ stage.
 ■ For pilot valve please refer to the Accessories Section of Chapter 2.
 ■ ** replace with process connections digits, please refer to codification table.

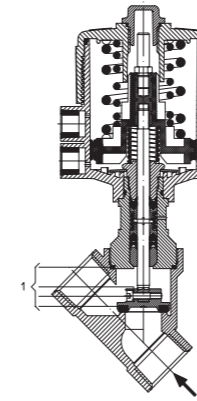
211A SERIES

Pneumatic valves, Angle seat valves

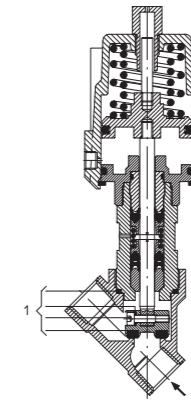
- 211A** are pneumatically actuated angle seat valves that come with:
- optimized body design for high flow rate
 - optimized body design that reduces water hammer effects
 - corrosion resistant body and actuator housing
 - optical position indicator
 - self adjusting stem packing for long service life
 - 360° adjustable actuator
 - Easily convertible design from NC to NO or double acting



NC, PA66 ACTUATOR



NC, STAINLESS STEEL ACTUATOR



Process Valves & Components ■ Pneumatic valves ■ Angle seat valves ■ 211A SERIES

TECHNICAL DATA

PIPES	G 1/2 + G 2
ACTUATOR SIZE	∅ 50 mm (stainless steel) ∅ 70 mm (PA66)
FLOW DIRECTION	below seat
CONTROL TYPE	single acting normally open, normally closed and double acting
FLUID TEMPERATURE	-40°C +180°C
AMBIENT TEMPERATURE	-10°C +80°C (according to Atex requirements)
VISCOSITY	max 600 cSt
PILOT FLUID	dry or lubricated air and neutral fluids
PILOT FLUID TEMPERATURE	max + 60°C

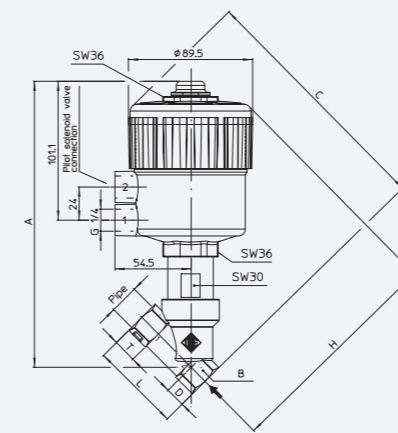
MATERIALS

VALVE BODY	stainless steel AISI 316
MAIN SEAL	PTFE
STEM PACKING	PTFE, FKM
ACTUATOR HOUSING	glass fibre reinforced PA66 or stainless steel AISI 316
ACTUATOR GASKETS	NBR

• CE
 - 2014/68/EU (PED)
 up to 1" - art. 4.3
 above 1" - cat. I module A
 - 2014/34/EU (ATEX) Available on request.
 Refer to next pages for the complete marking

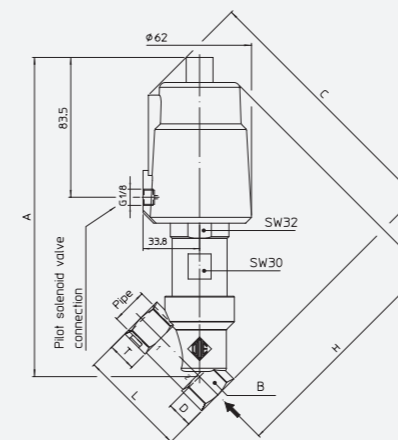
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DRAWING 1



PIPE ISO 228/1	WEIGHT [kg]	DIMENSIONS [mm]						
		A	B	C	D	H	L	T
G1/2	1.4	206,8	SW27	178,7	15,4	163,3	65	17
G3/4	1.5	211,7	SW32	188,6	21,9	166,7	75,5	19
G1	1.8	220,1	SW41	197,8	25,1	172,7	90	21
G1 1/4	2.4	235,9	SW50	212,3	28,5	183,8	110	24
G1 1/2	2.7	238,9	SW55	217	31	186	122	25,2
G2	3.9	247,8	SW70	229,7	37,5	192,2	151	28,5

DRAWING 2



PIPE ISO 228/1	WEIGHT [kg]	DIMENSIONS [mm]						
		A	B	C	D	H	L	T
G1/2	1.6	190,6	SW27	156	15,4	139,7	65	17
G3/4	1.7	190,8	SW32	162	21,9	139,8	75	19
G1	2.1	200,3	SW41	168	25,1	146,6	90	20,5

■ Please check the compatibility of the fluids in contact with the materials at RFQ stage.
 ■ For pilot valve please refer to Series 31A of Chapter 1.

2/2 NC

PIPE	ORIFICE SIZE	Kv	ACTUATOR	ACTUATOR PILOT PRESSURE [bar]		DIFFERENTIAL PRESSURE [bar]		MAX ALLOWABLE PRESSURE [bar]	CODE	DRAWING REFERENCE
				MIN	MAX	MIN	MAX			
ISO 228/1	Ø [mm]	[l/min]	Ø [mm]					PS	STAINLESS STEEL	
G1/2	15	80	70	4	10	0	16	40	21IA4T15GC2	1
G3/4	20	150	70	4	10	0	10	40	21IA5T20GC2	1
G1	25	190	70	4	10	0	10	40	21IA6T25GC2	1
G1 1/4	32	340	70	4	10	0	7	25	21IA7T32GC2	1
G1 1/2	40	430	70	4	10	0	4,5	25	21IA8T40GC2	1
G2	50	620	70	4	10	0	3	16	21IA9T50GC2	1

2/2 NC HIGH PRESSURE

PIPE	ORIFICE SIZE	Kv	ACTUATOR	ACTUATOR PILOT PRESSURE [bar]		DIFFERENTIAL PRESSURE [bar]		MAX ALLOWABLE PRESSURE [bar]	CODE	DRAWING REFERENCE
				MIN	MAX	MIN	MAX			
ISO 228/1	Ø [mm]	[l/min]	Ø [mm]					PS	STAINLESS STEEL	
G1/2	15	80	70	4	10	0	35	40	21IA4T15GC2-H	1
G3/4	20	150	70	4	10	0	25	40	21IA5T20GC2-H	1
G1	25	190	70	4	10	0	20	40	21IA6T25GC2-H	1
G1 1/4	32	340	70	4	10	0	13	25	21IA7T32GC2-H	1
G1 1/2	40	430	70	4	10	0	8	25	21IA8T40GC2-H	1
G2	50	620	70	4	10	0	5,5	16	21IA9T50GC2-H	1

2/2 NO

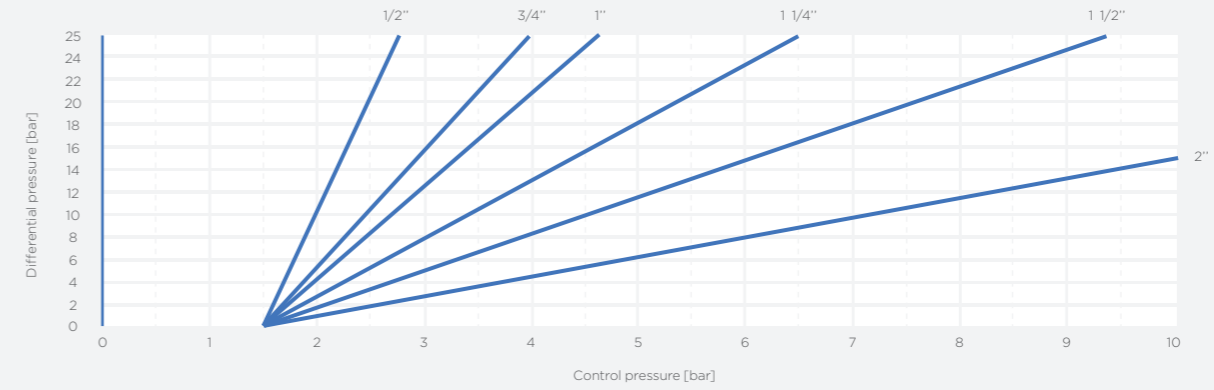
PIPE	ORIFICE SIZE	Kv	ACTUATOR	ACTUATOR PILOT PRESSURE [bar]		DIFFERENTIAL PRESSURE [bar]		MAX ALLOWABLE PRESSURE [bar]	CODE	DRAWING REFERENCE
				MIN	MAX	MIN	MAX			
ISO 228/1	Ø [mm]	[l/min]	Ø [mm]					PS	STAINLESS STEEL	
G1/2	15	80	70	1,5	10	0		40	21IA4T15GA2	1
G3/4	20	150	70	1,5	10	0		40	21IA5T20GA2	1
G1	25	190	70	1,5	10	0	SEE PRESSURE GRAPH	40	21IA6T25GA2	1
G1 1/4	32	340	70	1,5	10	0		25	21IA7T32GA2	1
G1 1/2	40	430	70	1,5	10	0		25	21IA8T40GA2	1
G2	50	620	70	1,5	10	0		16	21IA9T50GA2	1

2/2 DOUBLE ACTING

PIPE	ORIFICE SIZE	Kv	ACTUATOR	ACTUATOR PILOT PRESSURE [bar]		DIFFERENTIAL PRESSURE [bar]		MAX ALLOWABLE PRESSURE [bar]	CODE	DRAWING REFERENCE
				MIN	MAX	MIN	MAX			
ISO 228/1	Ø [mm]	[l/min]	Ø [mm]					PS	STAINLESS STEEL	
G1/2	15	80	70	5	10	0	35	40	21IA4T15GD2	1
G3/4	20	150	70	5	10	0	25	40	21IA5T20GD2	1
G1	25	190	70	5	10	0	20	40	21IA6T25GD2	1
G1 1/4	32	340	70	5	10	0	13	25	21IA7T32GD2	1
G1 1/2	40	430	70	5	10	0	8	25	21IA8T40GD2	1
G2	50	620	70	5	10	0	5,5	16	21IA9T50GD2	1

2/2 NC WITH STAINLESS STEEL ACTUATOR

PIPE	ORIFICE SIZE	Kv	ACTUATOR	ACTUATOR PILOT PRESSURE [bar]		DIFFERENTIAL PRESSURE [bar]		MAX ALLOWABLE PRESSURE [bar]	CODE	DRAWING REFERENCE
				MIN	MAX	MIN	MAX			
ISO 228/1	Ø [mm]	[l/min]	Ø [mm]					PS	STAINLESS STEEL	
G1/2	15	80	50	5	8	0	25	40	21IA4T15GCI-5	2
G3/4	20	150	50	5	8	0	15	40	21IA5T20GCI-5	2
G1	25	190	50	5	8	0	10	40	21IA6T25GCI-5	2



I 2 **II** 1 **III** IA **IV** 4 **V** T **VI** 15 **VII** G **VIII** C **IX** 2 **X** -

- I. NUMBER OF WAYS**
2 - 2 - way
- II. NUMBER OF ELEMENTS**
1 - 1 element
- III. SERIES**
IA
- IV. PIPE**
4 - 1/2"
5 - 3/4"
6 - 1"
7 - 1 1/4"
8 - 1 1/2"
9 - 2"
- V. SEALING MATERIAL**
T - PTFE
- VI. NOMINAL DIAMETER**
15 - DN15
20 - DN20
25 - DN25
32 - DN32
40 - DN40
50 - DN50
- VII. THREAD TYPE**
G - ISO 228/1
- VIII. PILOT FUNCTION**
C - Normally Closed
A - Normally Open
D - Double Effect
- IX. PILOT THREAD SIZE**
1 - G1/8
2 - G1/4
- X. OPTIONS**
5 - Stainless steel actuator
H - High pressure version
IPI - Position indicator
A - ATEX version
HA - High pressure ATEX version
5A - ATEX Version with StSt Actuator

CODIFICATION

OPTION	VALVE TYPE	VALVE SIZE/CONNECTIONS						NOTES
		G1/2	G3/4	G1	G1 1/4	G1 1/2	G2	
5	2/2 NC	X	X	X				
H	2/2 NC	X	X	X	X	X	X	
IPI	2/2 NC, NO	X	X	X	X	X	X	
A	2/2 NC, NO	X	X	X	X	X	X	REF. 2/2 NC, NO TABLES
HA	2/2 NC	X	X	X	X	X	X	REF. TO -H VERS TABLE
5A	2/2 NC	X	X	X				

OPTIONS AVAILABILITY

Ex According to Directive 2014/34/EU ATEX
II 2G Ex h IIC T6 o TX Gb
(-40°C ≤ Tamb ≤ 80°C)
for actuator Ø70mm

Ex According to Directive 2014/34/EU ATEX
II 2G Ex h IIC T6...T3 Gb
II 2D Ex h IIC T80°C...T180°C Db
(-40 °C ≤ Tamb ≤ 80°C)
for actuator Ø50mm

21IZ3 SERIES

Pneumatic valves, Modular valves

- 21IZ3** are pneumatically actuated modular valves that come with:
- optimized flow path on modular body design for high flow rate
 - optimized body design that reduces water hammer effects (below seat versions)
 - corrosion resistant body
 - self positioning plug to ensure the best seal
 - optical position indicator
 - self adjusting stem packing for long service life
 - freely selectable mounting orientation
 - 360° adjustable actuator

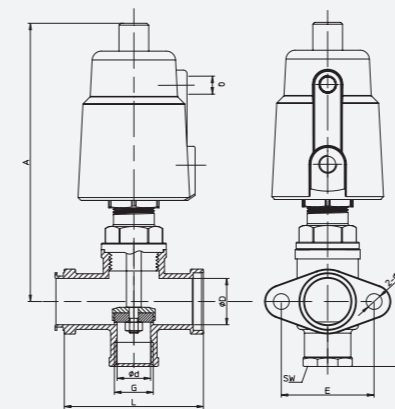


TECHNICAL DATA

PIPES	G 1/2 ÷ 1
ACTUATOR SIZE	∅ 50 mm
FLOW DIRECTION	bidirectional
CONTROL TYPE	single acting normally closed and double acting
FLUID TEMPERATURE	-10°C + 180°C
AMBIENT TEMPERATURE	-10°C + 80°C
VISCOSITY	max 600 cSt
PILOT FLUID	air, inert gases
PILOT FLUID TEMPERATURE	MAX +80°C

MATERIALS

VALVE BODY	stainless steel AISI 316 or AISI 304
MAIN SEAL	PTFE
STEM PACKING	PTFE, PTFE + CARBON
ACTUATOR HOUSING	stainless steel AISI 304
ACTUATOR GASKETS	FKM



PIPE	A mm	∅ D mm	∅ d mm	E mm	2-∅F mm	K mm	L mm	Q	SW	WEIGHT kg
1/2"	153	25	18	50	8,5	35	76	1/8"	27	1,2
1"		32	24	57		46	90		39	1,6

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SIZE	PIPE	ORIFICE SIZE	Kv	Kv	ACTUATOR	ACTUATOR PILOT PRESSURE [bar]		DIFFERENTIAL PRESSURE [bar]		MAX ALLOWABLE PRESSURE [bar]	CODE
		∅ [mm]	[m ³ /h]	[l/min]		∅ [mm]	MIN	MAX	MIN		
DN15	1/2"	18	6,06	101	50	3	4	0	16	16	21IZ3DSIATTO15BP
DN25	1"	24	11,1	185	50	3	4,5	0	16	16	21IZ3DSIATTO25BP

2/2 NC ABOVE SEAT

SIZE	PIPE	ORIFICE SIZE	Kv	Kv	ACTUATOR	ACTUATOR PILOT PRESSURE [bar]		DIFFERENTIAL PRESSURE [bar]		MAX ALLOWABLE PRESSURE [bar]	CODE
		∅ [mm]	[m ³ /h]	[l/min]		∅ [mm]	MIN	MAX	MIN		
DN15	1/2"	18	6,06	101	50	4,5	8	0	14	16	21IZ3DSIATTO15BP
DN25	1"	24	11,1	185	50	4,5	8	0	7,5	16	21IZ3DSIATTO25BP

2/2 NC BELOW SEAT

• CE
 - 2014/68/EU (PED)
 up to 1" - art. 4.3
 - 2014/34/EU (ATEX) Available on request.
 Refer to next pages for the complete marking

▪ Please check the compatibility of the fluids in contact with the materials at RFQ stage.
 ▪ For pilot valve please refer to accessories Section of Chapter 2.

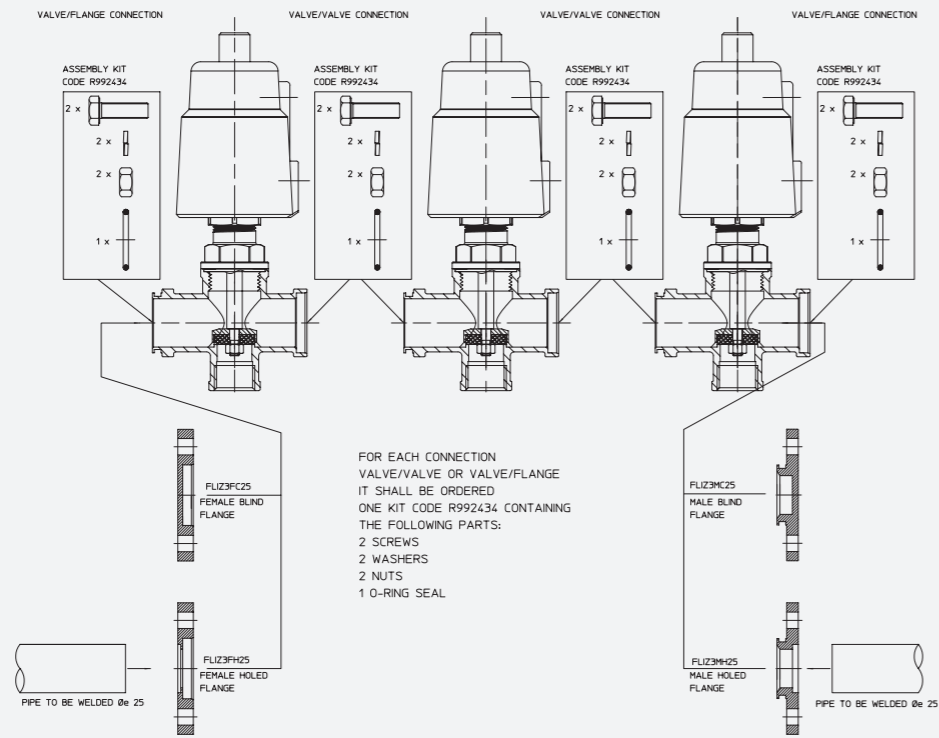
2/2 NC
DOUBLE ACTING
ABOVE SEAT

SIZE	PIPE	ORIFICE SIZE	Kv	Kv	ACTUATOR	ACTUATOR PILOT PRESSURE [bar]		DIFFERENTIAL PRESSURE [bar]		MAX ALLOWABLE PRESSURE [bar]	CODE
		Ø [mm]	[m³/h]	[l/min]		Ø [mm]	MIN	MAX	MIN		
DN15	1/2"	18	6,06	101	50	3	4	0	16	16	21I23DS3ATT015BP
DN25	1"	24	11,1	185	50	3	4,5	0	16	16	21I23DS3ATT025BP

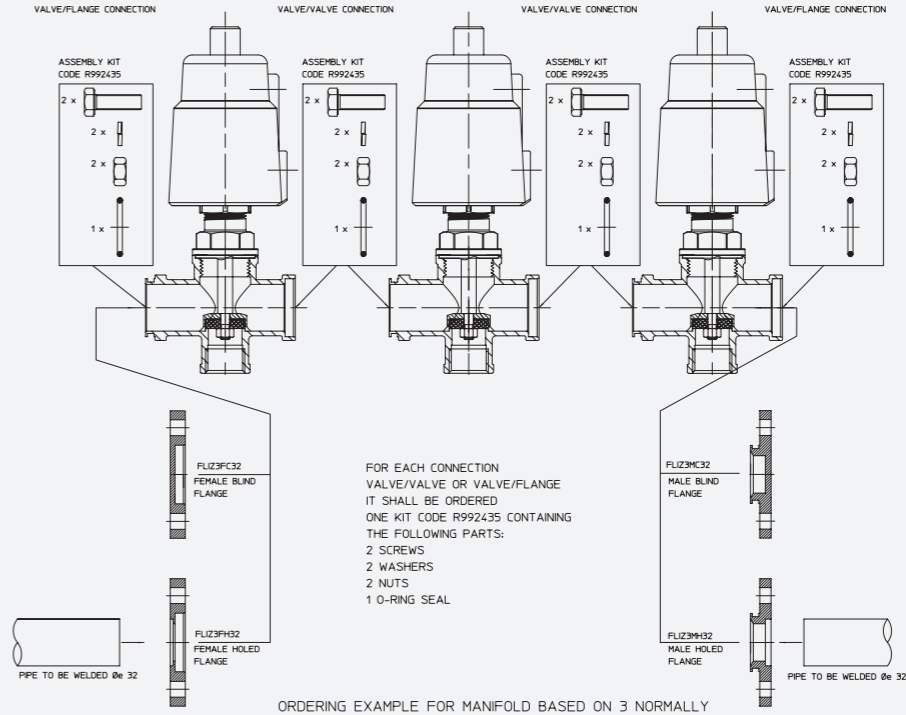
2/2 NC
DOUBLE ACTING
BELOW SEAT

SIZE	PIPE	ORIFICE SIZE	Kv	Kv	ACTUATOR	ACTUATOR PILOT PRESSURE [bar]		DIFFERENTIAL PRESSURE [bar]		MAX ALLOWABLE PRESSURE [bar]	CODE
		Ø [mm]	[m³/h]	[l/min]		Ø [mm]	MIN	MAX	MIN		
DN15	1/2"	18	6,06	101	50	3	8	0	16	16	21I23DS3ATT015BP
DN25	1"	24	11,1	185	50	3	6	0	13	16	21I23DS3ATT025BP

KIT 1 - DN15



Available on request flanges with G1 (F) thread connections:
KFLI23FB25 - female holed flange
KFLI23MB25 - male holed flange
Kits are comprehensive of nuts, washers, screws, O-Ring seals



KIT 2 - DN25

Available on request flanges with G1 1/4 (F) thread connections:
KFLI23FB32 - female holed flange
KFLI23MB32 - male holed flange
Kits are comprehensive of nuts, washers, screws, O-Ring seals



CHARACTER	DESCRIPTION
I	2 WAY 1 ELEMENT
II	SERIE IZ3
III	ACTUATOR SIZE DS - 50
IV	PILOT FUNCTION 1 - N.C., 3 - Double effect
V	BODY MATERIAL A - AISI 316, B - AISI 304
VI	SEATING SEAL T - PTFE
VII	STEM PACKING T - PTFE
VIII	NOMINAL SIZE 015 - G=1/2", D=25; 025 - G=1, D=32
IX	PROCESS CONNECTIONS BP - BSP, BT - BSPT
X	OPTIONS A - ATEX Version, P - Electrical Position Indicator, S - Stroke Limiter

CODIFICATION

OPTION	VALVE TYPE	ACTUATOR SIZE					NOTES
		40 mm	50 mm	63 mm	90 mm	125 mm	
A	2/2 NC, NO, DE	X	X	X	X	X	
P	2/2 NC, NO, DE	X	X	X	X	X	Available also as stand alone part, please refer to accessories chapter
S	2/2 NC, NO, DE		X	X	X		Available only pre-assembled on the valve

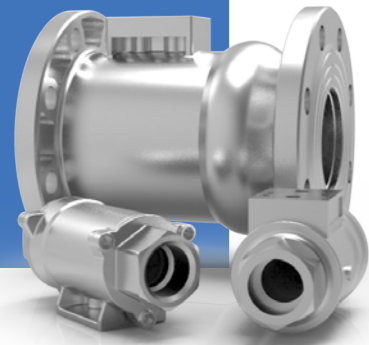
OPTIONS AVAILABILITY

According to Directive 2014/34/EU ATEX
 II 2G Ex h IIC T6...T3 Gb
 II 2D Ex h IIIC T80°C...T180°C Db
 (-10 °C ≤ Tamb ≤ 80°C)

21SH SERIES

Pneumatic valves, Coaxial valves

- 21SH** are pneumatically actuated coaxial shuttle valves that come with:
- optimized internal flow path for high flow rate with reduced pressure drop
 - compact design
 - corrosion resistant body
 - freely selectable mounting position
 - design suitable for low vacuum operation (150 mmHg)
 - unidirectional flow path



Process Valves & Components ■ Pneumatic valves ■ Coaxial valves ■ **21SH SERIES**

TECHNICAL DATA

PIPES	G 1/4 ÷ 2 (Threaded), DN65 ÷ DN100 (Flanged)
FLOW DIRECTION	above seat
CONTROL TYPE	single acting normally open, normally closed and double acting
FLUID TEMPERATURE	FKM -20°C + 150°C EPDM -20°C + 130°C
AMBIENT TEMPERATURE	-20°C + 80°C
VISCOSITY	max 500 cSt
PILOT FLUID	air, inert gases
PILOT FLUID TEMPERATURE	MAX + 80°C

MATERIALS

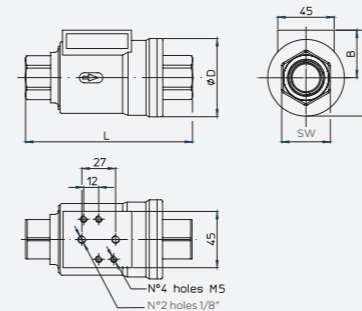
VALVE BODY	stainless steel AISI 316
MAIN SEAL	PTFE
STEM PACKING	PTFE, PTFE + GRAPHITE
ACTUATOR HOUSING	stainless steel AISI 304
ACTUATOR GASKETS	FKM

• **CE**
- 2014/68/EU (PED)
up to 1" - art. 4.3
above 1" up to 2" - cat. I module A
above 2" - cat. I module A (use only with gases of Group 2 or liquids)

- 2014/34/EU (ATEX) Available on request.
Refer to next pages for the complete marking

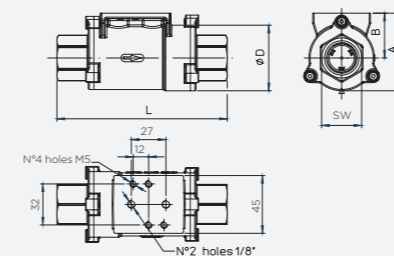
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21SH1



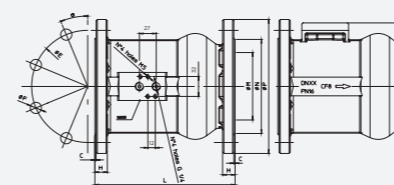
DN	PIPE	DIMENSIONS [mm]					WEIGHT kg
		A	B	Ø D	L	SW	
DN10	3/8"	56	33	46	98	22	0,8
DN15	1/2"	61	35	52	112	26,5	1,0
DN20	3/4"	72	40	64	135	32	1,5
DN25	1"	78	43	69	143	41	1,9
DN32	1 1/4"	94	51	86	165	50	3,1
DN40	1 1/2"	104	56	96	180	56	3,8
DN50	2"	116	62	108	207	70	5,7

21SH2



DN	PIPE	DIMENSIONS [mm]					WEIGHT kg
		A	B	Ø D	L	SW	
DN8	1/4"	49,5	31	37	98	22	0,5
DN10	3/8"	49,5	31	37	98	22	0,5
DN15	1/2"	53,3	32	42,5	112	26	0,7
DN20	3/4"	63,5	37,5	52	135	32	1,1
DN25	1"	70	40	60	143	40	1,5
DN32	1 1/4"	85,5	48	75	165	49	2,3
DN40	1 1/2"	95	53	84	180	53	2,8
DN50	2"	109	60	97	207	68	4,4

21SH4



FLANGE SIZE DIN 2543	PIPE	DIMENSIONS [mm]									α	WEIGHT kg
		C	D	Ø E	Ø F	H	L	Ø M	Ø N	Ø P		
DN65	2 1/2"	2	85	145	4-Ø18	20	192	66	120	180	45°	10,0
DN80	3"	2	92	160	8-Ø18	22	212	75	135	195	22,5°	13,3
DN100	4"	2	102	180	8-Ø18	22	227	94	155	215	22,5°	16,3

■ Please check the compatibility of the fluids in contact with the materials at RFQ stage.

SH1 - NC

SIZE	PIPE	ORIFICE SIZE	Kv		ACTUATOR PILOT PRESSURE [bar]		DIFFERENTIAL PRESSURE [bar]		MAX ALLOWABLE PRESSURE [bar]	CODE	DRAWING REFERENCE
		Ø [mm]	[m3/h]	[l/min]	MIN	MAX	MIN	MAX			
DN10	3/8"	10	1,26	21	3	5	0	16	16	21SH11AV010**	1
DN15	1/2"	15	2,58	43	4	5	0	16	16	21SH11AV015**	1
DN20	3/4"	20	5,34	89	4	5	0	16	16	21SH11AV020**	1
DN25	1"	25	12,36	206	3	5	0	16	16	21SH11AV025**	1
DN32	1 1/4"	32	16,44	274	3	5	0	16	16	21SH11AV032**	1
DN40	1 1/2"	40	20,04	334	3	5	0	16	16	21SH11AV040**	1
DN50	2"	50	26,64	444	5	6	0	16	16	21SH11AV050**	1

SH1 - NO

SIZE	PIPE	ORIFICE SIZE	Kv		ACTUATOR PILOT PRESSURE [bar]		DIFFERENTIAL PRESSURE [bar]		MAX ALLOWABLE PRESSURE [bar]	CODE	DRAWING REFERENCE
		Ø [mm]	[m3/h]	[l/min]	MIN	MAX	MIN	MAX			
DN10	3/8"	10	1,26	21	5	8	0	16	16	21SH10AV010**	1
DN15	1/2"	15	2,58	43	5	8	0	16	16	21SH10AV015**	1
DN20	3/4"	20	5,34	89	5	8	0	16	16	21SH10AV020**	1
DN25	1"	25	12,36	206	5	8	0	16	16	21SH10AV025**	1
DN32	1 1/4"	32	16,44	274	5	8	0	16	16	21SH10AV032**	1
DN40	1 1/2"	40	20,04	334	5	8	0	16	16	21SH10AV040**	1
DN50	2"	50	26,64	444	5	8	0	16	16	21SH10AV050**	1

SH1 - DOUBLE ACTING

SIZE	PIPE	ORIFICE SIZE	Kv		ACTUATOR PILOT PRESSURE [bar]		DIFFERENTIAL PRESSURE [bar]		MAX ALLOWABLE PRESSURE [bar]	CODE	DRAWING REFERENCE
		Ø [mm]	[m3/h]	[l/min]	MIN	MAX	MIN	MAX			
DN10	3/8"	10	1,26	21	3	5	0	16	16	21SH1*AV010**	1
DN15	1/2"	15	2,58	43	4	5	0	16	16	21SH1*AV015**	1
DN20	3/4"	20	5,34	89	4	5	0	16	16	21SH1*AV020**	1
DN25	1"	25	12,36	206	3	7	0	16	16	21SH1*AV025**	1
DN32	1 1/4"	32	16,44	274	3	7	0	16	16	21SH1*AV032**	1
DN40	1 1/2"	40	20,04	334	3	7	0	16	16	21SH1*AV040**	1
DN50	2"	50	26,64	444	5	7	0	16	16	21SH1*AV050**	1

SH2 - NC

SIZE	PIPE	ORIFICE SIZE	Kv		ACTUATOR PILOT PRESSURE [bar]		DIFFERENTIAL PRESSURE [bar]		MAX ALLOWABLE PRESSURE [bar]	CODE	DRAWING REFERENCE
		Ø [mm]	[m3/h]	[l/min]	MIN	MAX	MIN	MAX			
DN8	1/4"	10	1,2	20	3,5	5	0	16	16	21SH21AV008**	2
DN10	3/8"	10	1,26	21	3,5	5	0	16	16	21SH21AV010**	2
DN15	1/2"	15	2,58	43	3,5	5	0	16	16	21SH21AV015**	2
DN20	3/4"	20	5,34	89	3,5	5	0	16	16	21SH21AV020**	2
DN25	1"	25	12,36	206	3,5	5	0	16	16	21SH21AV025**	2
DN32	1 1/4"	32	16,44	274	3,5	5	0	16	16	21SH21AV032**	2
DN40	1 1/2"	40	20,04	334	3,5	5	0	16	16	21SH21AV040**	2
DN50	2"	50	26,64	444	5	6	0	16	16	21SH21AV050**	2

SH2 - NO

SIZE	PIPE	ORIFICE SIZE	Kv		ACTUATOR PILOT PRESSURE [bar]		DIFFERENTIAL PRESSURE [bar]		MAX ALLOWABLE PRESSURE [bar]	CODE	DRAWING REFERENCE
		Ø [mm]	[m3/h]	[l/min]	MIN	MAX	MIN	MAX			
DN8	1/4"	10	1,2	20	5	8	0	16	16	21SH20AV008**	2
DN10	3/8"	10	1,26	21	5	8	0	16	16	21SH20AV010**	2
DN15	1/2"	15	2,58	43	5	8	0	16	16	21SH20AV015**	2
DN20	3/4"	20	5,34	89	5	8	0	16	16	21SH20AV020**	2
DN25	1"	25	12,36	206	5	8	0	16	16	21SH20AV025**	2
DN32	1 1/4"	32	16,44	274	5	8	0	16	16	21SH20AV032**	2
DN40	1 1/2"	40	20,04	334	5	8	0	16	16	21SH20AV040**	2
DN50	2"	50	26,64	444	6	8	0	16	16	21SH20AV050**	2

SH2 - DOUBLE ACTING

SIZE	PIPE	ORIFICE SIZE	Kv		ACTUATOR PILOT PRESSURE [bar]		DIFFERENTIAL PRESSURE [bar]		MAX ALLOWABLE PRESSURE [bar]	CODE	DRAWING REFERENCE
		Ø [mm]	[m3/h]	[l/min]	MIN	MAX	MIN	MAX			
DN8	1/4"	10	1,2	20	3,5	5	0	16	16	21SH2*AV008**	2
DN10	3/8"	10	1,26	21	3,5	5	0	16	16	21SH2*AV010**	2
DN15	1/2"	15	2,58	43	3,5	5	0	16	16	21SH2*AV015**	2
DN20	3/4"	20	5,34	89	3,5	5	0	16	16	21SH2*AV020**	2
DN25	1"	25	12,36	206	3,5	5	0	16	16	21SH2*AV025**	2
DN32	1 1/4"	32	16,44	274	3,5	5	0	16	16	21SH2*AV032**	2
DN40	1 1/2"	40	20,04	334	3,5	5	0	16	16	21SH2*AV040**	2
DN50	2"	50	26,64	444	5	6	0	16	16	21SH2*AV050**	2

SH4

SIZE	PIPE	ORIFICE SIZE	Kv		ACTUATOR PILOT PRESSURE [bar]		DIFFERENTIAL PRESSURE [bar]		MAX ALLOWABLE PRESSURE [bar]	CODE	DRAWING REFERENCE
		Ø [mm]	[m3/h]	[l/min]	MIN	MAX	MIN	MAX			
DN65	2 1/2"	66	104,28	1738	3	5	0	12	16	21SH43BE065FL	3
DN80	3"	75	151,5	2525	3	5	0	12	16	21SH43BE080FL	3
DN100	4"	94	216	3600	3	5	0	12	16	21SH43BE100FL	3

SH4 Series available only with E = EPDM sealing

I	II	III	IV	V	VI	VII	VIII	IX
2	1	SH1	1	A	V	010	BP	-

CODIFICATION

I. NUMBERS OF WAYS
2 - 2-way

II. NUMBERS OF ELEMENTS
1 - 1-elements

III. SERIES
SH1 - threaded body
SH2 - bolted body
SH4 - flanged version

IV. PILOT FUNCTION
0 - NO
1 - NC
2 - Double Acting with spring
3 - Double Acting

V. BODY MATERIAL
A - AISI 316
B - AISI 304

VI. SEALING MATERIAL
V - FKM
E - EPDM

VII. NOMINAL DIAMETER
SH1 SERIES
008 - DN8
SH1 OR SH2 SERIES
010 - DN10
015 - DN15
020 - DN20
025 - DN25

032 - DN32
040 - DN40
050 - DN50

SH4 SERIES
065 - DN65
080 - DN80
100 - DN100

VIII. PROCESS CONNECTIONS
BP - BSP
BT - BSPT
FL - FLANGED

IX. OPTIONS
A - ATEX Version

According to Directive 2014/34/EU ATEX
 II 2G Ex h IIC T6...T3 Gb
 II 2D Ex h IIC T80°C...T180°C Db
 (-10 °C ≤ Tamb ≤ 80°C)

* replace with "2" for double acting with spring version or with "3" for double acting version.
 ** replace with process connections digits, please refer to codification table.

* replace with "2" for double acting with spring version or with "3" for double acting version.
 ** replace with process connections digits, please refer to codification table.

21DZ1 SERIES

Pneumatic Valves, Aseptic diaphragm valves

Aseptic diaphragm valve with single acting NC pneumatic actuator, ideal for use in critical applications such as those in the chemical, pharmaceutical, food & beverage sectors. Specific body design to ensure total separation between medium and actuation.

Diaphragm compliant with EC Regulation 1935/2004, FDA 21CFR 177.1550, USP40.

Bidirectional use thanks to the symmetrical body design.

Self-draining body design.

Optical position indicator.

Compatible with CIP / SIP processes.



Process Valves & Components ■ Pneumatic valves ■ Aseptic Diaphragm Valves ■ **21DZ1 SERIES**

TECHNICAL DATA

	WELDED	TRI-CLAMP
	NOMINAL SIZE	DN8 ÷ DN50
DIAPHRAGM SIZE	8 ÷ 50	
DIAPHRAGM LEAKAGE CLASS	CLASS A (EN 12266-1)	
FLUID TEMPERATURE	-10°C +150°C	
AMBIENT TEMPERATURE	-10°C +80°C	
PILOT FLUID	air, inert gases	
PILOT FLUID TEMPERATURE	max +50°C	
PILOT MAX. PRESSURE (PS)	8 bar	

MATERIALS

VALVE BODY	stainless steel AISI 316L (Ra ≤ 0,4 Qm)
DIAPHRAGM	PTFE + EPDM (PTFE in contact with the fluid)
PISTON SEAL	NBR - EPDM
ACTUATOR HOUSING	stainless steel AISI 304

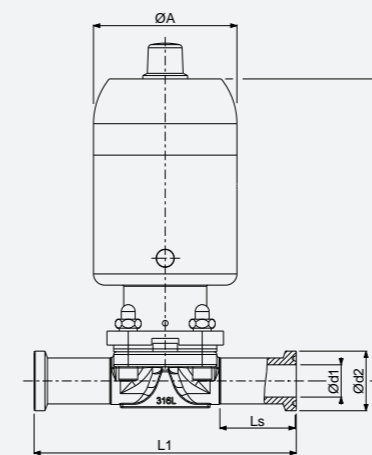
CE

- 2014/68/EU (PED)
up to 1" - art. 4.3
above 1" - cat. I module A
- 2014/34/EU (ATEX) Available on request.
Refer to next pages for the complete marking

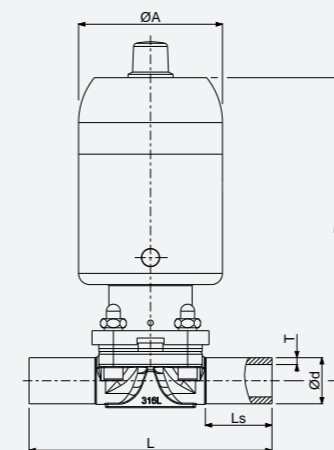
Diaphragm compliant with
EC Reg. 1935/2004,
FDA 21CFR 177.1550, USP40

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TRI-CLAMP CONNECTIONS



WELDED CONNECTIONS



DIM WELDED

NOMINAL SIZE	DIAPHRAGM SIZE	Ø A mm	B mm	Ls mm	L mm	DIN 11850-2 DIN 11866-A		DIN 11850-3		ASME BPE		ISO 1127 DIN 11866-B		Weight kg
						Ø d mm	T mm	Ø d mm	T mm	Ø d mm	T mm	Ø d mm	T mm	
DN8	8	47	85	20	72	-	-	-	-	6,35	0,89	-	-	0,55
DN10	8	47	85	20	72	-	-	-	-	9,53	0,89	-	-	0,55
DN15	8	57	106	20	72	-	-	-	-	12,7	1,65	-	-	0,9
DN15	10	65	134	29	108	19	1,5	20	2	-	-	21,3	1,6	0,9
DN20	10	65	134	29	108	-	-	-	-	19,05	1,65	-	-	1,6
DN20	25	88	170	26	120	23	1,5	24	2	-	-	26,9	1,6	1,6
DN25	25	88	170	26	120	29	1,5	30	2	25,4	1,65	33,7	2	3,4
DN40	40	109	196	30	153	41	1,5	43	2	38,1	1,65	48,3	2	5,1
DN50	50	129	226	30	173	53	1,5	54	2	50,8	1,65	60,3	2	7,7

DIM TRI-CLAMP

NOMINAL SIZE	DIAPHRAGM SIZE	Ø A mm	B mm	Ls mm	ASME BPE			ISO 1127 DIN 11866-B			DIN 11850 DIN 32676-A			Weight kg
					Ø d1 mm	Ø d2 mm	L1 mm	Ø d1 mm	Ø d2 mm	L1 mm	Ø d1 mm	Ø d2 mm	L1 mm	
DN8	8	47	85	15,5	4,57	25	63,5	-	-	-	-	-	-	0,6
DN10	8	47	85	15,5	7,75	25	63,5	-	-	-	-	-	-	0,6
DN15	8	57	106	15,5	9,4	25	63,5	-	-	-	-	-	-	0,95
DN15	10	65	134	34	-	-	-	18,1	50,5	108	16	34	108	0,95
DN20	10	65	134	34	15,75	25	101,6	-	-	-	-	-	-	1,65
DN20	25	88	170	30	-	-	-	23,7	50,5	117	20	34	117	1,65
DN25	25	88	170	30	22,1	50,5	114,3	29,7	50,5	127	26	50,5	127	3,5
DN40	40	109	196	33	34,8	50,5	139,7	44,3	64	159	38	50,5	159	5,2
DN50	50	129	226	39	47,5	64	158,8	56,3	77,5	190	50	64	190	7,7

2/2 NC - ASME BPE

NOMINAL DIAMETER	DIAPHRAGM SIZE	Kv		ACTUATOR PILOT PRESSURE [bar]		DIFFERENTIAL PRESSURE [bar]		MAX ALLOWABLE PRESSURE [bar]	CODE
		[m³/h]	[l/min]	MIN	MAX	MIN	MAX		
DN8	8	0,5	8,3	4,5	7	0	10	16	21DZ1AM1ABT008A**
DN10	8	1,1	18,3	4,5	7	0	10	16	21DZ1AM1ABT010A**
DN15	8	1,6	26,7	4,5	7	0	10	16	21DZ1AM1ABT015A**
DN20	10	5,7	95,0	4,5	7	0	10	16	21DZ1BM1ABT020A**
DN25	25	10,6	176,7	4,5	7	0	10	16	21DZ1CM1ABT025A**
DN40	40	21,9	365,0	4,5	7	0	10	16	21DZ1DM1ABT040A**
DN50	50	37,7	628,3	4,5	7	0	10	16	21DZ1EM1ABT050A**

2/2 NC - ISO, DIN

NOMINAL DIAMETER	DIAPHRAGM SIZE	Kv		ACTUATOR PILOT PRESSURE [bar]		DIFFERENTIAL PRESSURE [bar]		MAX ALLOWABLE PRESSURE [bar]	CODE
		[m³/h]	[l/min]	MIN	MAX	MIN	MAX		
DN15	10	5,0	83,3	4,5	7	0	10	16	21DZ1BM1ABT015A**
DN20	25	10,8	180,0	4,5	7	0	10	16	21DZ1CM1ABT020A**
DN25	25	10,6	176,7	4,5	7	0	10	16	21DZ1CM1ABT025A**
DN40	40	21,9	365,0	4,5	7	0	10	16	21DZ1DM1ABT040A**
DN50	50	37,7	628,3	4,5	7	0	10	16	21DZ1EM1ABT050A**

** replace with process connections digits, please refer to codification table.



- I. 2 WAY 1 ELEMENT**
- II. SERIES**
- III. DIAPHRAGM SIZE**
AM - 8
BM - 10
CM - 25
DM - 40
EM - 50
- IV. PILOT FUNCTION**
1 - N.C.
- V. BODY MATERIAL**
A - AISI 316L
- VI. ACTUATOR MATERIAL**
B - AISI 304
- VII. DIAPHRAGM MATERIAL**
T - PTFE+EPDM (2-layer diaphragm)
- VIII. NOMINAL DIAMETER**
008
010
015
020
025
040
050
- IX. POLISHING**
A - Mechanical polishing
B - Electropolishing
- X. PROCESS CONNECTIONS**
W2 - Welded DIN 11850-2 | DIN 11866 A
W3 - Welded DIN 11850-3
W4 - Welded ASME BPE
W5 - Welded ISO 1127 | DIN 11866 B
C1 - Tri-clamp ASME BPE
C2 - Tri-clamp DIN 32676-B (ISO 1127)
C3 - Tri-clamp DIN 32676-A (DIN 11850)
Other standards available on request
- XI. OPTIONS**
A - ATEX Version

According to Directive 2014/34/EU ATEX
 II 2G Ex h IIC T6...T3 Gb
 II 2D Ex h IIC T80°C...T180°C Db
 (-10 °C ≤ Tamb ≤ 80°C)

CODIFICATION

21DZ2 SERIES

Manual Valves, Aseptic diaphragm valves

Aseptic diaphragm valve with manual operation, ideal for use in critical applications such as those in the chemical, pharmaceutical, food & beverage sectors. Specific body design to ensure total separation between medium and actuation. Diaphragm compliant with EC Regulation 1935/2004, FDA 21CFR 177.1550, USP40. Bidirectional use thanks to the symmetrical body design. Self-draining body design. Compatible with CIP / SIP processes.



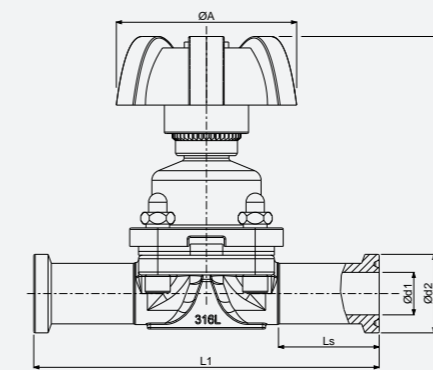
TECHNICAL DATA

NOMINAL SIZE	WELDED DN8 ÷ DN50	TRI-CLAMP DN8 ÷ DN50
DIAPHRAGM SIZE	8 ÷ 50	
DIAPHRAGM LEAKAGE CLASS	class A (EN 12266-1)	
FLUID TEMPERATURE	-10°C +150°C	
AMBIENT TEMPERATURE	-10°C +80°C	

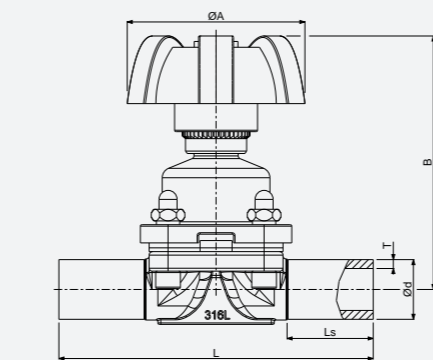
MATERIALS

VALVE BODY	stainless steel AISI 316L (Ra ≤ 0,4Qm)
DIAPHRAGM	PTFE + EPDM (PTFE in contact with the fluid)
HANDWHEEL	PA

DRAWING 1



DRAWING 2



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▪ **CE**
- 2014/68/EU (PED)
up to 1" - art. 4.3
above 1" - cat. I module A

▪ Diaphragm compliant with
EC Reg. 1935/2004,
FDA 21CFR 177.1550, USP40

▪ Please check the compatibility of the fluids in contact with the materials at RFQ stage.

DIM WELDED

NOMINAL SIZE	DIAPHRAGM SIZE	Ø A mm	B mm	Ls mm	L mm	DIN 11850-2 DIN 11866-A		DIN 11850-3		ASME BPE		ISO 1127 DIN 11866-B		Weight kg
						Ø d mm	T mm	Ø d mm	T mm	Ø d mm	T mm	Ø d mm	T mm	
DN8	8	40	64	20	72	-	-	-	-	6,35	0,89	-	-	0,3
DN10	8	40	64	20	72	-	-	-	-	9,53	0,89	-	-	0,3
DN15	8	50	64	20	72	-	-	-	-	12,7	1,65	-	-	0,3
DN15	10	65	85	29	108	19	1,5	20	2	-	-	21,3	1,6	0,3
DN20	10	65	85	29	108	-	-	-	-	19,05	1,65	-	-	0,6
DN20	25	85	102	26	120	23	1,5	24	2	-	-	26,9	1,6	0,6
DN25	25	85	102	26	120	29	1,5	30	2	25,4	1,65	33,7	2	1,35
DN40	40	105	115	30	153	41	1,5	43	2	38,1	1,65	48,3	2	2,5
DN50	50	125	133	30	173	53	1,5	54	2	50,8	1,65	60,3	2	3,6

DIM TRI-CLAMP

NOMINAL SIZE	DIAPHRAGM SIZE	Ø A mm	B mm	Ls mm	ASME BPE			ISO 1127 DIN 11866-B			DIN 11850 DIN 32676-A			Weight kg
					Ø d1 mm	Ø d2 mm	L1 mm	Ø d1 mm	Ø d2 mm	L1 mm	Ø d1 mm	Ø d2 mm	L1 mm	
DN8	8	40	64	15,5	4,57	25	63,5	-	-	-	-	-	-	0,35
DN10	8	40	64	15,5	7,75	25	63,5	-	-	-	-	-	-	0,35
DN15	8	50	64	15,5	9,4	25	63,5	-	-	-	-	-	-	0,35
DN15	10	65	85	34	-	-	-	18,1	50,5	108	16	34	108	0,35
DN20	10	65	85	34	15,75	25	101,6	-	-	-	-	-	-	0,65
DN20	25	85	102	30	-	-	-	23,7	50,5	117	20	34	117	0,65
DN25	25	85	102	30	22,1	50,5	114,3	29,7	50,5	127	26	50,5	127	1,45
DN40	40	105	115	33	34,8	50,5	139,7	44,3	64	159	38	50,5	159	2,6
DN50	50	125	133	39	47,5	64	158,8	56,3	77,5	190	50	64	190	3,85

2/2 NC - ASME BPE

NOMINAL DIAMETER	DIAPHRAGM SIZE	Kv	Kv	DIFFERENTIAL PRESSURE [bar]		MAX ALLOWABLE PRESSURE [bar]	CODE
		[m³/h]	[l/min]	MIN	MAX		
DN8	8	0,4	6,7	0	10	16	21DZ2AMAT008A**
DN10	8	1	16,7	0	10	16	21DZ2AMAT010A**
DN15	8	1,1	18,3	0	10	16	21DZ2AMAT015A**
DN20	10	5,5	91,7	0	10	16	21DZ2BMAT020A**
DN25	25	11,4	190,0	0	10	16	21DZ2CMAT025A**
DN40	40	17,5	291,7	0	10	16	21DZ2DMAT040A**
DN50	50	34,4	573,3	0	10	16	21DZ2EMAT050A**

2/2 NC - ISO, DIN

NOMINAL DIAMETER	DIAPHRAGM SIZE	Kv	Kv	DIFFERENTIAL PRESSURE [bar]		MAX ALLOWABLE PRESSURE [bar]	CODE
		[m³/h]	[l/min]	MIN	MAX		
DN15	10	4,9	81,7	0	10	16	21DZ2BMAT015A**
DN20	25	10,2	170,0	0	10	16	21DZ2CMAT020A**
DN25	25	11,4	190,0	0	10	16	21DZ2CMAT025A**
DN40	40	17,5	291,7	0	10	16	21DZ2DMAT040A**
DN50	50	34,4	573,3	0	10	16	21DZ2EMAT050A**

I	II	III	IV	V	VI	VII	VIII
21	DZ2	CM	A	T	025	A	W4

I. 2 WAY 1 ELEMENT
II. SERIES
III. DIAPHRAGM SIZE
 AM - 8
 BM - 10
 CM - 25
 DM - 40
 EM - 50
IV. BODY MATERIAL
 A - AISI 316L

V. DIAPHRAGM MATERIAL
 T - PTFE+EPDM (2-layer diaphragm)

VI. NOMINAL DIAMETER
 008
 010
 015
 020
 025
 040
 050

VII. POLISHING
 A - Mechanical polishing
 B - Electropolishing

VIII. PROCESS CONNECTIONS
 W2 - Welded DIN 11850-2 | DIN 11866 A
 W3 - Welded DIN 11850-3
 W4 - Welded ASME BPE
 W5 - Welded ISO 1127 | DIN 11866 B
 C1 - Tri-clamp ASME BPE
 C2 - Tri-clamp DIN 32676-B (ISO 1127)
 C3 - Tri-clamp DIN 32676-A (DIN 11850)

Other standards available on request

CODIFICATION

R SERIES

Self Actuated Valves, Pressure Reducers

A wide range of pressure reducers suitable for the use with different types of fluids: compressed air, gases and liquids. The control of the outlet pressure is realized by means of a diaphragm or a piston.



Process Valves & Components ■ Self actuated valves ■ Pressure Reducers ■ R SERIES

TECHNICAL DATA

CONNECTIONS	FROM 1/4" TO 4"
INLET PRESSURE	up to 220 bar
OPERATING TEMPERATURE	-20°C +80°C
SHUTTER LEAKAGE CLASS	class A (EN 12266-1)
CERTIFICATIONS	CE, ATEX

MATERIALS

VALVE BODY	aluminum, brass, stainless steel
SEALING	NBR, FKM, EPDM
DIAPHRAGM	PTFE + elastomer
PISTON	aluminum, brass, stainless steel

CODIFICATION

I	II	III	IV	V	VI	VII	VIII	IX	X	XI	
R	2	2	D	#	NN	NN	NN	NN	N	NN	NN

I. PRESSURE REDUCER SERIES

II. PRESSURE STAGES

1 - I' stage
2 - II' stage
3 - III' stage
P - dome loaded (II' stage)

III. BODY MATERIAL

1 - brass
2 - aluminium
3 - stainless steel

IV. BODY SIZE

V. CONNECTIONS

VI. INLET PRESSURE

VII. OUTLET PRESSURE

VIII. SEAL

IX. RELIEVING FUNCTION

X. CERTIFICATIONS

XI. ACCESSORIES

■ Please refer to specific model documentation for more details

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MATRIX - PRESSURE REDUCERS

HIGH SENSITIVITY III° STAGE (Inlet pressure < 7 bar)					
SERIES	CONNECTIONS	ALUMINUM	BRASS	INOX	
STANDARD SERIES	1/4	R32B			
	3/8				
	1/2	R32D			R33B
	3/4				R33D
	1				
	1 1/4	R32D			R33D
	1 1/2				R32D
2	R32F				

MEDIUM PRESSURE II° STAGE (7 bar < Inlet pressure < 80 bar)					
SERIES	CONNECTIONS	ALUMINUM	BRASS	INOX	
STANDARD SERIES	1/4		R21B	R23B	
	3/8			R21C	R23C
	1/2		R21D		
	3/4	R22D			
	1			R23F	
	1 1/4				
	1 1/2	R21F			
2					
HIGH FLOW	1 1/2	R22H		R23H	
	2	R22I		R23I	
	3 DN80				
	4 DN100				
DOME LOADED	3/4			RP3D	
	1				
	1 1/4				
	1 1/2				

HIGH PRESSURE I° STAGE (Inlet pressure > 80 bar)				
SERIES	CONNECTIONS	ALUMINUM	BRASS	INOX
LAB	1/4		R11A/R11B	R13B
	3/8			R13C

FR SERIES

Self Actuated Valves, filter pressure reducers

A wide range of filter pressure reducers suitable for the use with different types of fluids: compressed air, gases and liquids. The control of the outlet pressure is realized by means of a diaphragm or a piston.



TECHNICAL DATA

CONNECTIONS	from 1/4" to 1 1/2"
INLET PRESSURE	up to 50 bar
OPERATING TEMPERATURE	-20°C +60°C -20°C +80°C
SHUTTER LEAKAGE CLASS	class A (EN 12266-1)
FILTERING CAPACITY	5 - 50 Qm
CUP CAPACITY	up to 500 cm ³
CERTIFICATIONS	CE, ATEX

MATERIALS

VALVE BODY	aluminum, stainless steel
SEALING	NBR, FKM
DIAPHRAGM	NBR + PTFE
PISTON	aluminum, stainless steel

CODIFICATION

I	II	III		IV	V	VI	VII	VIII	IX	X
FR	2	D	#	NN	NN	NN	N	NN	NN	NN

I. FILTER PRESSURE REDUCER SERIES
II. BODY MATERIAL
 1 - brass
 3 - stainless steel

III. BODY SIZE
IV. CONNECTIONS
V. INLET PRESSURE
VI. OUTLET PRESSURE

VII. FILTERING CAPACITY
VIII. CUP + DRAIN
IX. CERTIFICATIONS
X. ACCESSORIES

■ Please refer to specific model documentation for more details

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MEDIUM PRESSURE II° STAGE (7 bar < Inlet pressure < 80 bar)				
SERIES	CONNECTIONS	ALUMINUM	BRASS	INOX
STANDARD SERIES	1/4			FR3B
	3/8			FR3C
	1/2			
	3/4	FR2D		FR3D
	1			
	1 1/4			
	1 1/2			
	2			

MATRIX - FILTER PRESSURE REDUCERS

S SERIES

Self Actuated Valves, Overflow valves

A wide range of overflow valves suitable for the use with different types of fluids: compressed air, gases and liquids. The control of the inlet pressure is realized by means of a diaphragm or a piston.



TECHNICAL DATA

CONNECTIONS	from 1/4" to 2"
INLET PRESSURE	up to 200 bar
OPERATING TEMPERATURE	-20°C +80°C
CERTIFICATIONS	CE, ATEX

MATERIALS

VALVE BODY	aluminum, brass, stainless steel
SEALING	NBR, FKM, EPDM
DIAPHRAGM	PTFE + elastomer
PISTON	aluminum, brass, stainless steel

CODIFICATION

I	II	III	IV	V	VI	VII	VIII	IX
S	1	1	D	#	NN	NN	NN	NN

I. OVERFLOW VALVE SERIES

II. PRESSURE STAGES

1 - I° stage

2 - II° stage

3 - III° stage

III. BODY MATERIAL

1 - brass

2 - aluminium

3 - stainless steel

IV. BODY SIZE

V. CONNECTIONS

VI. OVERFLOW PRESSURE

VII. SEAL

VIII. CERTIFICATIONS

IX. ACCESSORIES

■ Please refer to specific model documentation for more details

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MATRIX - OVERFLOW VALVES

HIGH SENSITIVITY III° STAGE (Inlet pressure < 7 bar)

SERIES	CONNECTIONS	ALUMINUM	BRASS	INOX
STANDARD SERIES	1/4	S32D		S33C
	3/8			
	1/2			
	3/4			
	1	S33D		
	1 1/4			
	1 1/2			
2	S32F	S33F		

MEDIUM PRESSURE II° STAGE (7 bar < Inlet pressure < 80 bar)

SERIES	CONNECTIONS	ALUMINUM	BRASS	INOX
STANDARD SERIES	1/4		S21B	S23C
	3/8		S21C	
	1/2		S21D	S23D
	3/4			
	1			
	1 1/4		S21F	S23F
	1 1/2			
2				

HIGH PRESSURE I° STAGE (Inlet pressure > 80 bar)

SERIES	CONNECTIONS	ALUMINUM	BRASS	INOX		
STANDARD SERIES	1/4					
	3/8					
	1/2					
	3/4					
	1				S11D	S13D
	1 1/4					
	1 1/2					
2						

MDO SERIES

Solenoid valves for gas appliances

MDO are 2-way Normally Open valves with manual reset specifically designed for gas appliances. During normal conditions there is no electric absorption, wear or tear of the internal parts. The anti-tampering security key feature is available on request. The valves can be equipped with a manual closing push button, which can be used to replace a manual closing tap.



TECHNICAL DATA

PORT CONNECTION	G1/2 ÷ G2
SEALING MATERIALS	NBR
FLUIDS	non-aggressive gases of family I, II, III (dry gases)
RESPONSE TIME	closing time < 1 s
PROTECTION DEGREE	IP65 EN 60529 (DIN 40050) with plug connector
VOLTAGE TOLERANCE	-15% +10%
COIL HOUSING	CLASS F (155°C)
AMBIENT TEMPERATURE	-15°C +60°C
MAX SURFACE TEMPERATURE	+70°C

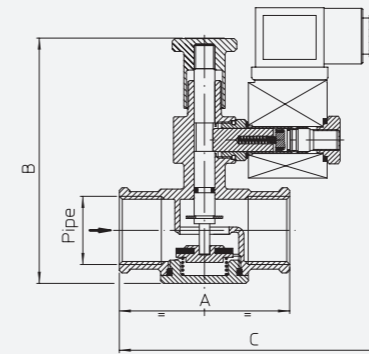
MATERIALS

BODY	Brass or Aluminum
SEALING	NBR

• CE
- 2014/30/EU (EMC)
- 2014/35/EU (LVD)

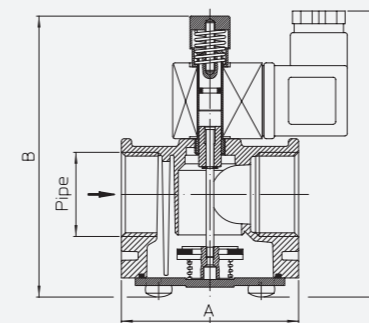
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DRAWING 1



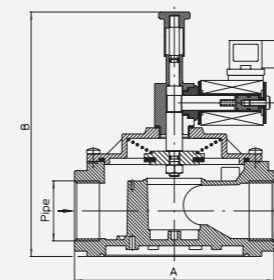
PIPE	DIMENSIONS [mm]		
	A	B	C
G1/2	66	95 ~ 107	102
G3/4	66	95 ~ 107	102
G1	82	110 ~ 118	-

DRAWING 2-4



PIPE	DIMENSIONS [mm]		
	A	B	C
G1/2	70	111	113
G3/4	70	111	113
G1	70	111	113

DRAWING 3



PIPE	DIMENSIONS [mm]	
	A	B
G1 1/4	160	196
G1 1/2	160	196
G2	160	220

• Please check the compatibility of the fluids in contact with the materials at RFQ stage.

2/2 NO WITH
MANUAL RESET

PIPE	ORIFICE SIZE	COIL TYPE	CONNECTOR TYPE	MAX WORKING PRESSURE [mbar]	CODE		DRAWING REFERENCE
	Ø [mm]				BRASS	ALUMINUM	
G1/2	15	A	A	500	MD01G04A1B015	-	1
		A	A	500	-	MD04G04A1B015	2
G3/4	20	A	A	500	MD01G05A1B020	-	1
		A	A	500	-	MD04G05A1B020	2
G1	25	B*	A - C	500	MD01G06A1B025	-	1
		A	A	500	-	MD04G06A1B025	2
G1 1/4	32	B**	A - C	500	-	MD03G07A1B032	3
G1 1/2	40	B**	A - C	500	-	MD03G08A1B040	3
G2	50	B**	A - C	500	-	MD03G09A1B050	3

2/2 NO WITH MANUAL
RESET AND SECURITY KEY

PIPE	ORIFICE SIZE	COIL TYPE	CONNECTOR TYPE	MAX WORKING PRESSURE [mbar]	CODE		DRAWING REFERENCE
	Ø [mm]				BRASS	ALUMINUM	
G1/2	15	A	A	500	-	MD04G04A2B015	4
G3/4	20	A	A	500	-	MD04G05A2B020	4
G1	25	A	A	500	-	MD04G06A2B025	4

I II III IV V VI VII VIII IX X XI
MDO 1 G 04 A 1 B 015 - A 01 A

- I. SERIES**
MDO - 2/2 NO with manual reset
- II. BODY MATERIAL**
1 - brass
3 - aluminum (> 1")
4 - aluminum (≤ 1")
- III. THREADED CONNECTION TYPE**
G - gas
- IV. PIPE SIZE**
04 - 1/2"
05 - 3/4"
06 - 1"
07 - 1 1/4"
08 - 1 1/2"
09 - 2"
- V. VALVE TYPE**
A - 2/2 NO
- VI. SECURITY KEY**
1 - without
2 - with
- VII. SEALING MATERIAL**
B - NBR
- VIII. ORIFICE DIAMETER**
015 - 15 mm
020 - 20 mm
025 - 25 mm
032 - 32 mm
040 - 40 mm
050 - 50 mm

IX. COIL TYPE	X. VOLTAGE		XI. CONNECTOR OPTION	POWER [W/VA]
A	01	12 V DC	A	6
	11	12 V - 50/60 Hz	A	4
	21	24 V DC	A	6
	31	24 V - 50/60 Hz	A	4
	61	110 V - 50/60 Hz	A	4
B*	71	230 V - 50/60 Hz	A	7
	02	12 V DC	A	8
	13	12 V - 50/60 Hz	C	20
	22	24 V DC	A	8
	33	24 V - 50/60 Hz	A	22
B**	63	110 V - 50/60 Hz	A	21
	72	230 V - 50/60 Hz	A	8
	03	12 V DC	A	20
	13	12 V - 50/60 Hz	C	20
	23	24 V DC	A	21
B**	33	24 V - 50/60 Hz	A	22
	63	110 V - 50/60 Hz	A	21
B**	74	230 V - 50/60 Hz	A	23

XI. CONNECTOR OPTION
 A - Standard
 C - Rectified (12 V-50/60 Hz - 24 V-50/60 Hz)

CODIFICATION

MD1 SERIES

Solenoid valves for gas appliances

MD1 are 2-way Normally Closed valves with manual reset specially designed for gas appliances.



TECHNICAL DATA

PORT CONNECTION	G1/2 ÷ G2
SEALING MATERIALS	NBR
FLUIDS	non-aggressive gases of family I, II, III (dry gases)
RESPONSE TIME	closing time < 1s
FILTER ELEMENT	1 mm wire mesh
PROTECTION DEGREE	IP65 EN 60529 (DIN 40050) with plug connector
VOLTAGE TOLERANCE	-15% +10%
COIL HOUSING	CLASS F (155°C)
AMBIENT TEMPERATURE	-15°C +60°C
MAX SURFACE TEMPERATURE	+80°C

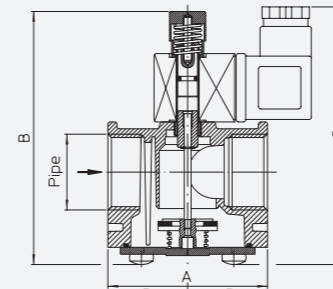
MATERIALS

BODY	Brass or Aluminum
SEALING	NBR

• CE
 - 2014/30/EU (EMC)
 - 2014/35/EU (LVD)
 - 2016/426 (GAR)
 Approval certificate IMQ CE-0051
 EC certified according to EN 161+A3:2013

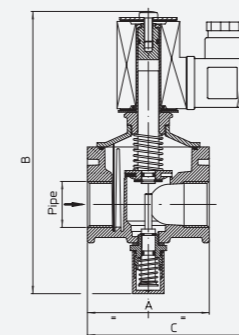
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DRAWING 1



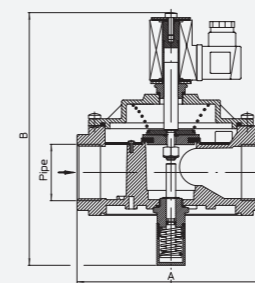
PIPE	DIMENSIONS [mm]		
	A	B	C
G1/2	66	133	92
G3/4	66	133	92
G1	82	142	100

DRAWING 2



PIPE	DIMENSIONS [mm]		
	A	B	C
G1/2	70	163	94
G3/4	70	163	94
G1	70	163	94

DRAWING 3



PIPE	DIMENSIONS [mm]	
	A	B
G1 1/4	160	196
G1 1/2	160	196
G2	160	220

2/2 NC WITH MANUAL RESET

PIPE	ORIFICE SIZE	COIL TYPE	CONNECTOR TYPE	MAX WORKING PRESSURE [mbar]	CODE		DRAWING REFERENCE
	Ø [mm]				BRASS	ALUMINUM	
G1/2	15	B	A - C - D	500	MD11G04C1B015	-	1
					-	MD12G04C1B015	2
G3/4	20	B	A - C - D	500	MD11G05C1B020	-	1
					-	MD12G05C1B020	2
G1	25	B	A - C - D	500	MD11G06C1B025	-	1
					-	MD12G06C1B025	2
G1 1/4	32	B	A - C - D	500	-	MD13G07C1B032	3
G1 1/2	40	B	A - C - D	500	-	MD13G08C1B040	3
G2	50	B	A - C - D	500	-	MD13G09C1B050	3

I
II
III
IV
V
VI
VII
VIII
IX
X
XI

MD1
1
G
04
C
1
B
015
-
B
02
A

CODIFICATION

- I. SERIES**
MD1 - 2/2 NC with manual reset
- II. BODY MATERIAL**
1 - brass
2 - aluminum (≤ 1")
3 - aluminum (> 1")
- III. THREADED CONNECTION TYPE**
G - gas
- IV. PIPE SIZE**
04 - 1/2"
05 - 3/4"
06 - 1"
07 - 1 1/4"
08 - 1 1/2"
09 - 2"
- V. VALVE TYPE**
C - 2/2 NC
- VI. SECURITY KEY**
1 - without
- VII. SEALING MATERIAL**
B - NBR
- VIII. ORIFICE DIAMETER**
015 - 15 mm
020 - 20 mm
025 - 25 mm
032 - 32 mm
040 - 40 mm
050 - 50 mm

IX. COIL TYPE	X. VOLTAGE		XI. CONNECTOR OPTION	POWER [W/VA]
B	02	12 V DC	A	8
	12	12 V - 50/60 Hz	C	8
	22	24 V DC	A	8
	32	24 V - 50/60 Hz	C	8
	62	110 V - 50/60 Hz	D	8
	73	230 V - 50/60 Hz	D	9

- XI. CONNECTOR OPTION**
A - Standard
C - Rectified (12 V-50/60 Hz - 24 V-50/60 Hz)
D - Rectified (110 V-50/60 Hz - 230 V-50/60 Hz)

MD2 SERIES

Solenoid valves for gas appliances

MD2 are 2-way Normally Closed Automatic valves specially designed for gas appliances.

These valves can be supplied with a flow rate regulation.



Process Valves & Components ■ Solenoid valves for gas appliances ■ **MD2 SERIES**

TECHNICAL DATA

PORT CONNECTION	G1/2 ÷ G2
SEALING MATERIALS	NBR
FLUIDS	non-aggressive gases of family I, II, III (dry gases)
RESPONSE TIME	opening time < 1 s closing time < 1 s
FILTER ELEMENT	1 mm wire mesh
PROTECTION DEGREE	IP65 EN 60529 (DIN 40050) with plug connector
VOLTAGE TOLERANCE	-15% +10%
COIL HOUSING	CLASS F (155°C)
AMBIENT TEMPERATURE	-20°C +60°C
MAX SURFACE TEMPERATURE	MD21 - MD22 85°C MD23 90°C

MATERIALS

BODY	Brass or Aluminum
SEALING	NBR

SIL LEVEL

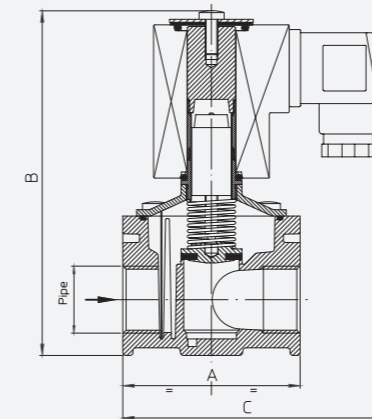
The SIL level of the stand-alone solenoid valve is SIL 2. When two valves are installed in series with EN 1643 Valve Proving System, the achieved level is SIL 3 in accordance with EN 676:2008. The solenoid valve has PL d level. For further data refer to the SIL LEVEL table.

HARDWARE FAILURE TOLERANCE - HFT	0
COMMON CAUSE FAILURE - CCF IN POINTS	75
SAFE FAILURE FRACTION - SFF IN %	65%
EXPECTED LIFETIME CYCLES - B _{10d}	251278
EXPECTED LIFETIME T _{10d} [yr]	87
PROBABILITY OF DANGEROUS FAILURES PFH _d [1/h]	1,33E-07
PL - PERFORMANCE LEVEL	D
SAFETY INTEGRITY LEVEL - SIL	2
MEAN TIME TO DANGEROUS FAILURE MTTF _d [yr]	860

- CE
- 2014/30/EU (EMC)
- 2014/35/EU (LVD)
- 2016/426 (GAR)
- Approval certificate IMQ CE-0051
- EC certified according to EN 161+A3:2013

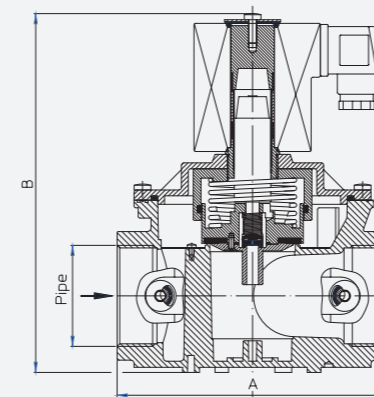
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DRAWING 1-2



PIPE	DIMENSIONS [mm]		
	A	B	C
G3/4	70	136	103
G1	70	136	103

DRAWING 3-4



PIPE	DIMENSIONS [mm]		
	A	B	C
G3/4	70	136	105
G1	70	136	105

PIPE	DIMENSIONS [mm]	
	A	B
G1 1/4	160	187
G1 1/2	160	187

PIPE	DIMENSIONS [mm]	
	A	B
G1 1/2	160	213
G2	160	213

■ Please check the compatibility of the fluids in contact with the materials at RFQ stage.

2/2 NC AUTOMATIC

PIPE	ORIFICE SIZE	COIL TYPE	CONNECTOR TYPE	MAX WORKING PRESSURE [mbar]	CODE	DRAWING REFERENCE
	Ø [mm]				ALUMINUM	
G1/2	15	C	A - C - D	200	MD21G04C4B015	1
			E - F - G - M	360	MD22G04C4B015	2
G3/4	20	C	A - C - D	200	MD21G05C4B020	1
			E - F - G - M	360	MD22G05C4B020	2
G1	25	C*	E - F - G - M	200	MD21G06C4B025	1
			E - F - G - M	360	MD22G06C4B025	2
G1 1/4	32	D	E - F - G - M	200	MD21G07C4B032	3
			E - F - G - M	360	MD22G07C4B032	4
			E - F - G - M	500	MD23G07C4B032	4
G1 1/2	40	D	E - F - G - M	200	MD21G08C4B040	3
			E - F - G - M	360	MD22G08C4B040	4
G2	50	D	E - F - G - M	200	MD21G09C4B050	4
			E - F - G - M	360	MD22G09C4B050	4
		D	E - F - G - M	500	MD23G09C4B050	4

I MD1 II 1 III G IV 04 V C VI 1 VII B VIII 015 IX - X B02 XI A

- I. SERIES**
MD2 -2/2 NC Automatic
- II. MAX. WORKING PRESSURE**
1 - 200 mbar
2 - 360 mbar
3 - 500 mbar
- III. THREADED CONNECTION TYPE**
G - gas
- IV. PIPE SIZE**
04 - 1/2"
05 - 3/4"
06 - 1"
07 - 1 1/4"
08 - 1 1/2"
09 - 2"
- V. VALVE TYPE**
C - 2/2 NC
- VI. SECURITY KEY**
4 - Automatic
- VII. SEALING MATERIAL**
B - NBR
- VIII. ORIFICE DIAMETER**
015 - 15 mm
020 - 20 mm
025 - 25 mm
032 - 32 mm
040 - 40 mm
050 - 50 mm

IX. COIL TYPE	X. VOLTAGE		XI. CONNECTOR OPTION	POWER [W/VA]
C	04	12 V DC	A	16
	14	12 V - 50/60 Hz	C	12
	24	24 V DC	A	17
	34	24 V - 50/60 Hz	C	14
	64	110 V - 50/60 Hz	D	17
C*	75	230 V - 50/60 Hz	D	18
	05	12 V DC	E	23/6
	15	12 V - 50/60 Hz	F	20/6
	25	24 V DC	E	27/7
	35	24 V - 50/60 Hz	F	24/7
C**	65	110 V - 50/60 Hz	M	29/9
	76	230 V - 50/60 Hz	G	30/9
	06	12 V DC	E	56/16
	16	12 V - 50/60 Hz	F	56/16
	26	24 V DC	E	56/16
D	36	24 V - 50/60 Hz	F	56/16
	66	110 V - 50/60 Hz	M	63/20
	77	230 V - 50/60 Hz	G	54/18
	27	24 V DC	E	68/18
	37	24 V - 50/60 Hz	F	68/18
	67	110 V - 50/60 Hz	M	77/23
	78	230 V - 50/60 Hz	G	89/25

- XI. CONNECTOR OPTION**
A - Standard
C - Rectified (12 V-50/60 Hz - 24 V-50/60 Hz)
D - Rectified (110 V-50/60 Hz - 230 V-50/60 Hz)
E - Standard + Energy Saving (12 V DC - 24 V DC)
F - Rectified + Energy Saving (12 V-50/60 Hz - 24 V-50/60 Hz)
G - Rectified + Energy Saving (230 V-50/60 Hz)
M - Rectified + Energy Saving (110 V-50/60 Hz)

CODIFICATION

FIL100 SERIES

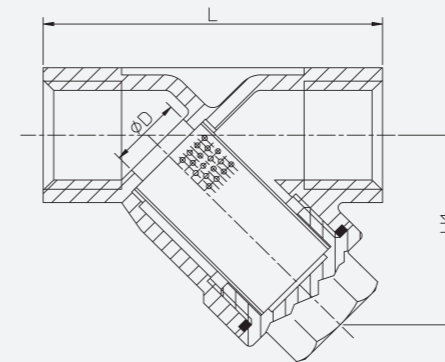
"Y" Filters

FIL100 are compact design, easily maintainable filter elements with stainless steel body and several filtration options available.



TECHNICAL DATA	
NOMINAL SIZE	DN8 ÷ DN80
FLUID TEMPERATURE	-10°C + 220°C
AMBIENT TEMPERATURE	-10°C + 80°C
NOMINAL PRESSURE	PN55
MESH SIZE	see codification table

MATERIALS	
BODY	stainless steel AISI 316
FILTER ELEMENT	stainless steel AISI 304
GASKET	PTFE



PIPE	Ø D	H1	L	WEIGHT Kg
1/4	14	37	65	0,27
3/8	14	37	65	0,25
1/2	14	37	65	0,23
3/4	20	45	80	0,36
1	25	54	90	0,62
1 1/4	32	59	105	0,91
1 1/2	40	66	120	1,22
2	50	77	138	1,93
3	80	118	210	6,80

I	II	III	IV	V	VI
FIL100	B	BP	A	B	A

<p>I. SERIE</p> <p>II. PIPE</p> <p>B - 1/4"</p> <p>C - 3/8"</p> <p>D - 1/2"</p> <p>E - 3/4"</p> <p>F - 1"</p> <p>G - 1 1/4"</p> <p>H - 1 1/2"</p> <p>I - 2"</p> <p>L - 3"</p>	<p>III. PROCESS CONNECTION</p> <p>BP - BSP</p> <p>BT - BSPT</p> <p>NT - NPT</p> <p>IV. BODY MATERIAL</p> <p>A - AISI 316</p> <p>V. FILTER ELEMENT MATERIAL</p> <p>B - AISI 304</p>	<p>VI. MESH SIZE</p> <p>A - Size 20 Perforated</p> <p>B - Size 20 Wired</p> <p>C - Size 30 Wired</p> <p>D - Size 80 Wired</p> <p>E - Size 100 Wired</p>
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CODIFICATION

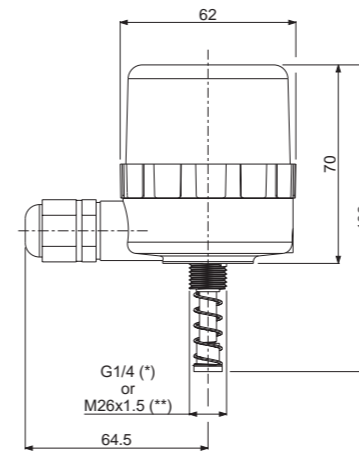
• CE
- 2014/68/EU (PED)
up to 1" - art. 4.3
above 1" up to 2" - cat. I module A (use only with gases of Group 2 or liquids)
above 2" - art. 4.3 (use only with liquids of Group 2)

• Please check the compatibility of the fluids in contact with the materials at RFQ stage.

P SERIES

Accessories, Electrical Position Indicator

The **Electrical Position Indicator** is an accessory to be assembled on pneumatic angle seat valves series 211Z1 / 211Z3. This device, mounted directly on the valve's actuator, allows to monitor the relative opening and closing status through a local visual control (LEDs) or remotely via electrical signal. It can be supplied individually as an accessory or already preassembled on the valve.



(*) Pipe connection G 1/4 for actuators 40, 50, 63, 90 mm
 (**) Pipe connection M26x1,5 for actuators 125 mm

Process Valves & Components ■ Accessories ■ Electrical Position Indicator ■ **P SERIES**

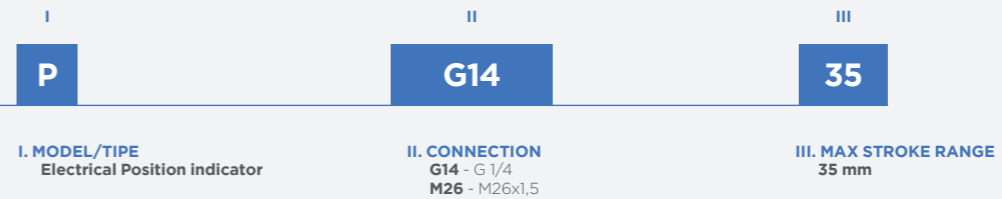
TECHNICAL DATA

VALVE STROKE RANGE	5 - 35 mm
SUPPLY VOLTAGE	12 V ÷ 36 V DC
OPERATING CURRENT	25 mA at 24 V DC
AMBIENT TEMPERATURE	- 20°C ÷ 70°C
PROTECTION CLASS	IP65 EN 60529
MICRO SWITCH TYPE	SPDT (hinge roller lever, unipolar with two positions)
CABLE BUSHING	M16X1,5

MATERIALS

HOUSING	PA6
PROTECTION COVER	PC (polycarbonate)
FEEDBACK ROD	Stainless steel AISI series 300
SPRING	STAINLESS STEEL AISI SERIES 300

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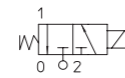
■ For product pre-assembled on the valve, please add the extension "-P" to the valve code.

CODIFICATION

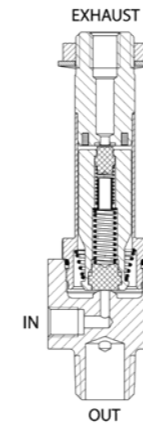
31JNX-31JLX SERIES

Accessories, Solenoid Pilot

31JNX and **31JLX** series are 3/2 NC valves with a with a compact design that allows the optimization of circuits inside the narrow spaces of the machines. Thanks to the G1/8 (M) outlet port, it is possible to mount the valve directly on the head of the actuators. This feature will ease the operations in the assembly line and reduce parts count. The armature tube is made of stainless steel to ensure greater strength and durability to the valve. Available on request the version with screw manual operator.



3/2 NC



Process Valves & Components ■ Accessories ■ Solenoid Pilot ■ **31JNX-31JLX SERIES**

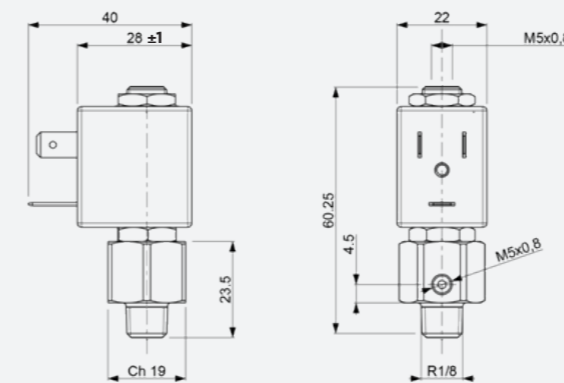
TECHNICAL DATA

PORT CONNECTION	M5 (inlet, exhaust), R1/8 (outlet)	
SEALING MATERIALS	FKM	
FLUID TEMPERATURE	-10°C + 140°C	
FLUIDS	Air, inert gas	
VISCOSITY	Max. 12 cSt	
TUBE Ø - COIL WIDTH - SERIES	ø 10 mm - 22 mm	LBA05, LVA05 (class F), LBV05 (class H)
INSTALLATION	as required, preferably with actuator upright	
PROTECTION DEGREE	IP65 EN 60529 (DIN 40050) with plug connector	

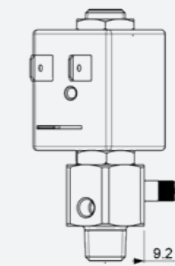
MATERIALS

BODY	Nickel Plated Brass UNI EN 12165 CW617N or AISI 316	
ORIFICE	Nickel Plated Brass UNI EN 12165 CW617N or AISI 316	
ARMATURE TUBE	Stainless steel AISI Series 300	
FIXED CORE	Stainless steel AISI Series 400	
PLUNGER	Stainless steel aisi series 400	
PHASE DISPLACEMENT RING	Copper (Cu 99,9%) or gold plated copper	
SPRING	Stainless steel AISI Series 300	
SEALING	V=FKM	

DRAWING 1



MANUAL OPERATOR OPTION



PIPE	ORIFICE SIZE	Kv	COIL SERIES	PRESSURE [bar]			CODE		DRAWING REFERENCE	
	Ø [mm]			MIN	MOPD AC	DC	PS	BRASS		STAINLESS STEEL
M5 x R1/8	1,5	0,8	L*05	0	10	10	40	31JNXW0V15-N	31JLXW0V15	1

■ 3rd way exhaust ø 1.5 mm.

I	II	III	IV	V	VI	VII	VIII	IX
3	1	JN	X	W	O	V	15	- N

- I. NUMBER OF WAYS**
3 - 3-way
- II. NUMBER OF ELEMENTS**
1 - 1 element
- III. SERIES**
JN - 3/2 brass body
JL - 3/2 stainless steel body
- IV. CONNECTIONS**
X - Inlet, exhaust M5 (F), Outlet R1/8

- V. CORE TUBE TYPE**
W - for 3/2 3rd way exhaust ø 1.5 mm
- VI. PHASE DISP. RING MATERIAL**
O - copper
- VII. SEALING MATERIAL**
V - FKM
- VIII. ORIFICE Ø [mm] MULTIPLIED BY 10**

- IX. VERSIONS**
N - nickel plated body (valid only for brass body, JN series)
MN - nickel plated body and manual override (valid only for brass body, JN series)
blank - no options (valid only for stainless steel body, JL series)
M - manual operator, screw type (valid only for stainless steel body, JL series)

3/2 NC

CODIFICATION

- CE**
- 2014/35/EU (LVD)
- 2014/30/EU (EMC)
- 2014/68/EU (PED), art. 4.3
- UL** recognized and **VDE, CSA** approved coils are available for this series, please refer to coil section.
- EXPLOSION PROOF COILS**
suitable for zone 2-22 are available for this series. Please refer to ATEX coil section for further details.

■ The fluids listed in the "technical data" tables should be considered as a recommendation. Please check the chemical compatibility of the fluids with the materials of the valve at RFQ stage.
■ For spare parts list please refer to the dedicated chapter.

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3 ATEX

2-WAY

SOLENOID VALVES

DIRECT ACTING

21A - 21L SERIES 201

INDIRECT ACTING

21WA-W - 21X SERIES 205

COMBINED ACTING

21HT - 21IH SERIES 211

3-WAY

DIRECT ACTING

31A - 31L SERIES 215

5-WAY

INDIRECT ACTING

51 SERIES 219

ACCESSORIES

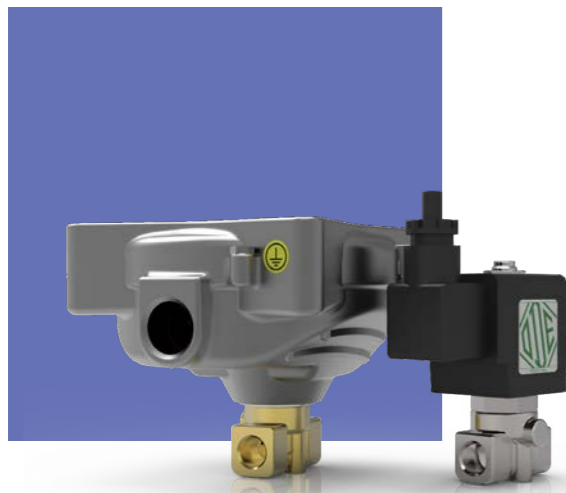
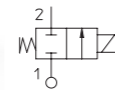
CABLE GLAND P992219

P992219 221

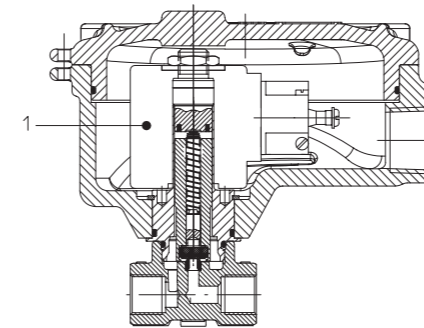
21A - 21L SERIES

Solenoid Valves, 2-way, Direct acting

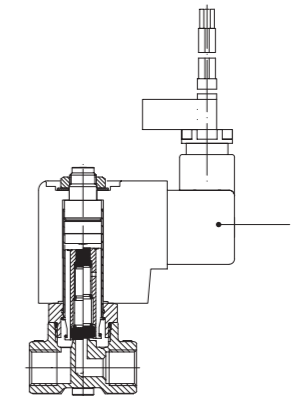
21A and **21L** are direct acting solenoid valves. The fixed core and armature tube are welded together to enhance pressure resistance and leak-tightness. A large selection of seal materials provides wide chemical compatibility.



NC, Ex d



NC, Ex mb



Atex ■ Solenoid Valves ■ 2-way ■ Direct acting ■ 21A 21L SERIES

TECHNICAL DATA

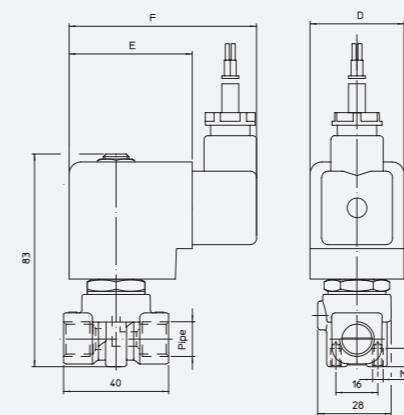
PORT CONNECTION	G 1/4 ÷ G 1/8	
SEALING MATERIALS	FKM	HNBR
FLUID TEMPERATURE	-10°C +80°C	-30°C +80°C
FLUIDS	air, inert gases, water, oils, gasoline, diesel	air, inert gases, water, R134a, R404a
VISCOSITY	12 cSt up to orifice 1.5 mm, 37 cSt for orifice 2.0 mm, 53 cSt for orifice 2.5 mm and above	
TUBE Ø - COIL WIDTH - SERIES	Ex mb	ø 14 mm - 36 mm TNA (class F)
	Ex d	ø 13 mm - 30 mm BDV08 (class H)
INSTALLATION	as required, preferably with actuator upright	
PROTECTION DEGREE	Ex mb	IP65 EN 60529 (DIN 40050)
	Ex d	IP67 EN 60529 (DIN 40050) with cable gland IP67 or higher

MATERIALS

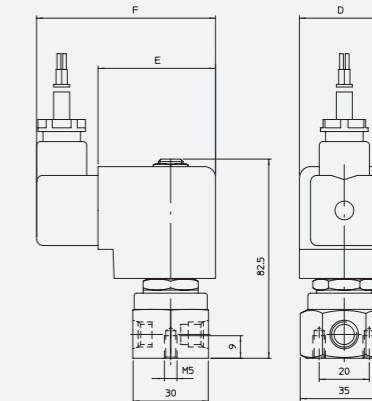
BODY	Brass UNI EN 12165 CW617N or stainless steel AISI 316
ORIFICE	Stainless steel AISI series 300 for brass body AISI 316 for stainless steel body
ARMATURE TUBE	Stainless steel AISI Series 300
FIXED CORE	Stainless steel AISI Series 400
PLUNGER	Stainless steel AISI Series 400
PHASE DISPLACEMENT RING	Copper (Cu 99,9%) or gold plated copper
SPRING	Stainless steel AISI Series 300
SEALING	V=FKM, F=HNBR

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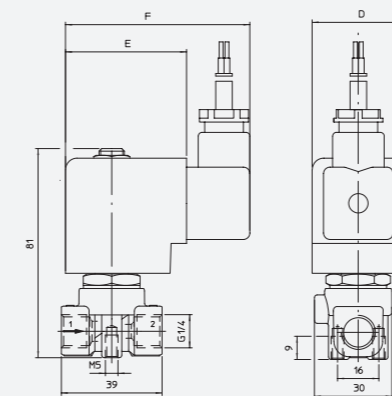
DRAWING 1



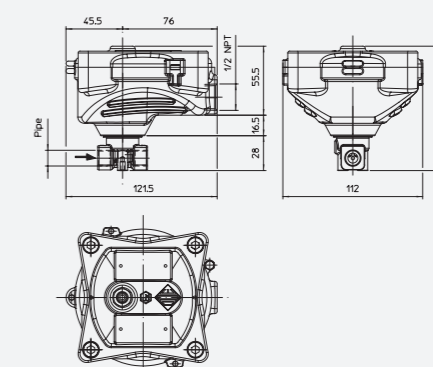
DRAWING 2



DRAWING 3



DRAWING 4



PIPE	DIMENSIONS [mm]		
	D	E	F
ISO 228/1			
G1/8	36	47	76
G1/4			

- **CE**
- 2014/35/EU (LVD)
- 2014/30/EU (EMC)
- 2014/68/EU (PED) art. 4.3 up to 1",
- 2014/34/EU (ATEX). Refer to next pages for the complete marking
- **INDUSTRIAL OXYGEN**
Special versions suitable for contact with industrial oxygen are available. Please refer to codification options.
- **UL** recognized and **VDE, CSA** approved coils are available for this series, please refer to coil section.

▪ The fluids listed in the "technical data" tables should be considered as a recommendation. Please check the chemical compatibility of the fluids with the materials of the valve at RFQ stage.
▪ For spare parts list please refer to the dedicated chapter.

Ex mb 2/2 NC

PIPE	ORIFICE SIZE	Kv	COIL SERIES	PRESSURE [bar]			CODE		DRAWING REFERENCE	
				MIN	MOPD		BRASS	STAINLESS STEEL		
					AC	DC				PS
G1/8	1,5	1,4	TNA	0	16	16	40	21A3QDV15	-	1
	2	2	TNA	0	16	16	40	21A3QDV20	-	1
	2,5	3,2	TNA	0	14	9	40	21A3QDV25	-	1
								-	21L1QDV25	2
	3	4	TNA	0	10	6	40	21A3QDV30	-	1
								-	21L1QDV30	2
4	5	TNA	0	6	1,7	40	-	21L1QDV40	2	
4,5	6,5	TNA	0	5	2	40	21A3QDV45	-	1	
G1/4	1,5	1,4	TNA	0	16	16	40	21A2QDV15	-	1
	2	2	TNA	0	16	16	40	21A2QDV20	-	1
	2,5	3,2	TNA	0	14	9	40	21A2QDV25	-	1
								-	21L2QDV25	3
	3	4	TNA	0	10	6	40	21A2QDV30	-	1
								-	21L2QDV30	3
4	5	TNA	0	6	1,7	40	-	21L2QDV40	3	
4,5	6,5	TNA	0	5	2	40	21A2QDV45	-	1	
5,5	9	TNA	0	3	1	40	21A2QDV55	-	1	
				3,5	1	40	-	21L2QDV55	3	



According to Directive 2014/34/EU ATEX

II 2 G Ex mb IIC T4 Gb
II 2 D Ex mb tb IIIC T130°C Db

Ex d - 2/2 NC

PIPE	ORIFICE SIZE	Kv	COIL SERIES	PRESSURE [bar]			CODE		DRAWING REFERENCE	
				MIN	MOPD		BRASS	STAINLESS STEEL		
					AC	DC				PS
G1/8	1,5	1,4	BDV08	0	30	18	40	21A3KIV15	-	4
	2	2	BDV08	0	22	16	40	21A3KIV20	-	4
	2,5	3,2	BDV08	0	14	9	40	21A3KIV25	-	4
	3	4	BDV08	0	10	6	40	21A3KIV30	-	4
G1/4	1,5	1,4	BDV08	0	30	18	40	21A2KIV15	-	4
	2	2	BDV08	0	22	16	40	21A2KIV20	-	4
	2,5	3,2	BDV08	0	14	9	40	21A2KIV25	21L2KIV25	4
	3	4	BDV08	0	10	6	40	21A2KIV30	21L2KIV30	4
	4	5	BDV08	0	6	1,7	40	-	21L2KIV40	4
5,5	9	BDV08	0	3,5	1	40	-	21L2KIV55	4	

Ex d - 2/2 NO

PIPE	ORIFICE SIZE	Kv	COIL SERIES	PRESSURE [bar]			CODE		DRAWING REFERENCE	
				MIN	MOPD		BRASS	STAINLESS STEEL		
					AC	DC				PS
G1/8	1,5	1,4	BDV08	0	25	25	40	21A3ZIV15D	-	4
	2	2	BDV08	0	20	20	40	21A3ZIV20D	-	4
	2,5	3,2	BDV08	0	14	14	40	21A3ZIV25D	-	4
	3	4	BDV08	0	10	10	40	21A3ZIV30D	-	4
G1/4	1,5	1,4	BDV08	0	25	25	40	21A2ZIV15D	-	4
	2	2	BDV08	0	20	20	40	21A2ZIV20D	-	4
	2,5	3,2	BDV08	0	14	14	40	21A2ZIV25D	-	4
3	4	BDV08	0	10	10	40	21A2ZIV30D	-	4	



According to Directive 2014/34/EU ATEX

II 2G Ex d IIC T6 o T5 Gb
II 2D Ex tb IIIC T80°C o T95°C Db IP67



I. NUMBER OF WAYS
2 - 2-way

II. NUMBER OF ELEMENTS
1 - 1 element

III. SERIES
A - brass body, Ø13 mm core tube
L - StSt body, Ø13 mm core tube

IV. CONNECTIONS
for A series
3 - G1/8

2 - G1/4
for L series
1 - G1/8
2 - G1/4

V. CORE TUBE TYPE
QD - 2/2 NC, 'mb' protection type
KI - 2/2 NC, 'd' protection type
ZI - 2/2 NO, 'd' protection type

VI. SEALING MATERIAL
V - FKM
F - HNBR

VII. ORIFICE Ø [mm] MULTIPLIED BY 10

VIII. COIL IDENTIFICATION
Blank - std. for NC
D - 8 W coil for NO, 'd' protection type

IX. OPTIONS
OX - degreasing for industrial oxygen use

CODIFICATION

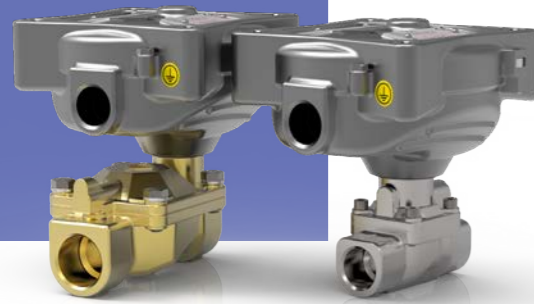
For sealing different from FKM, replace the letter "V" with the ones corresponding to the other materials.
V= FKM, F=HNBR.

For sealing different from FKM, replace the letter "V" with the ones corresponding to the other materials.
V= FKM, F=HNBR.

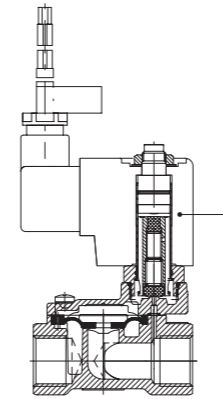
21WA - W - 21X SERIES

Solenoid Valves, 2-way, Indirect acting

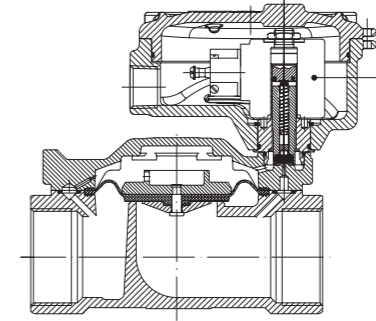
21WA-W and **21X** are indirect acting solenoid valves. A minimum operating pressure differential of 0,1-0,2 bar is required for correct operation. A large selection of seal materials provides wide chemical compatibility.



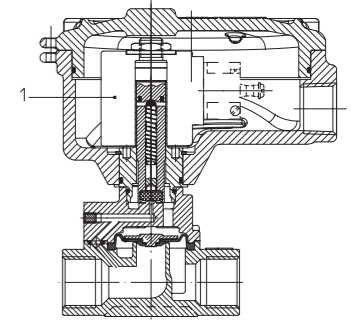
NC, BRASS, UP TO 1/2", Ex mb



NC, BRASS, UP TO 2", Ex d



NC, STAINLESS STEEL, UP TO 3/4", Ex d



Atex ■ Solenoid Valves ■ 2-way ■ Indirect acting ■ 21WA - W - 21X SERIES

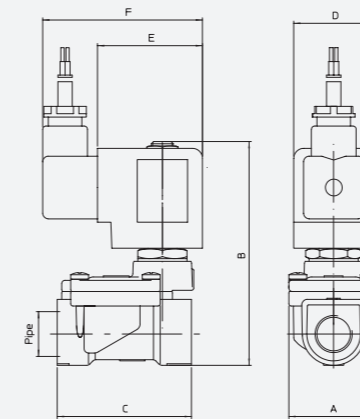
TECHNICAL DATA

PORT CONNECTION	G3/8 ÷ G2			
SEALING MATERIALS	NBR	FKM	EPDM	HNBR
FLUID TEMPERATURE	-10°C +80°C	-10°C +80°C	-10°C +80°C	-30°C +80°C
FLUIDS	Air, inert gas, water	oils, gasoline, diesel	Water, steam	air, inert gases, water, R134a, R404a
VISCOSITY	max. 12 cSt			
TUBE Ø - COIL WIDTH - SERIES	Ex mb	10 - 36 mm	TNA (class F)	
	Ex d	8 - 30 mm	BDV (class H)	
INSTALLATION	as required, preferably with actuator upright			
PROTECTION DEGREE	Ex mb	IP65 EN 60529 (DIN 40050)		
	Ex d	IP67 EN 60529 (DIN 40050) with cable gland IP67 or higher		

MATERIALS

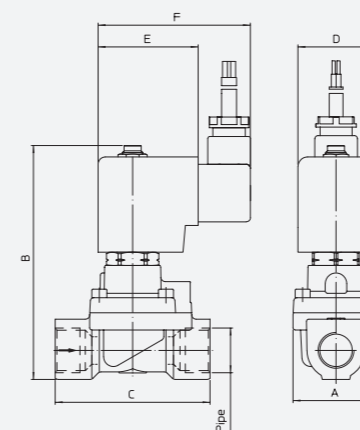
BODY, ORIFICE	Brass UNI EN 12165 CW617N or stainless steel AISI 316
ARMATURE TUBE	Stainless steel AISI Series 300
FIXED CORE	Stainless steel AISI Series 400
PLUNGER	Stainless steel AISI Series 400
PHASE DISPLACEMENT RING	Copper (Cu 99.9%) or gold plated copper
SPRING	Stainless steel AISI Series 300
SEALING	B=NBR, V=FKM, E=EPDM, F=HNBR

DRAWING 1



PIPE ISO 228/1	DIMENSIONS [mm]					
	A	B	C	D	E	F
G3/8	40	103	60	36	47	76
G1/2	40	103	66			

DRAWING 2



PIPE ISO 228/1	DIMENSIONS [mm]					
	A	B	C	D	E	F
G1/2	40	110	73	36	47	76
G3/4	65	120	104			
G1	65	120	104			

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CE

- 2014/35/EU (LVD)
- 2014/30/EU (EMC)
- 2014/68/EU (PED) art. 4.3 up to 1", cat. I module A above 1"
- 2014/34/EU (ATEX). Refer to next pages for the complete marking

INDUSTRIAL OXYGEN

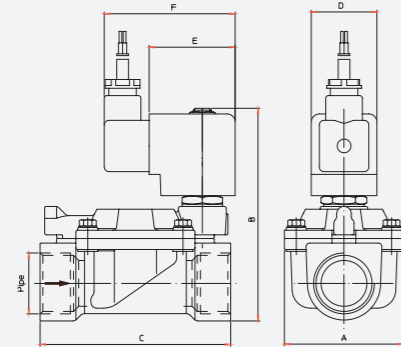
- Special versions suitable for contact with industrial oxygen are available. Please refer to codification options.

UL recognized and VDE, CSA

- approved coils are available for this series, please refer to coil section.

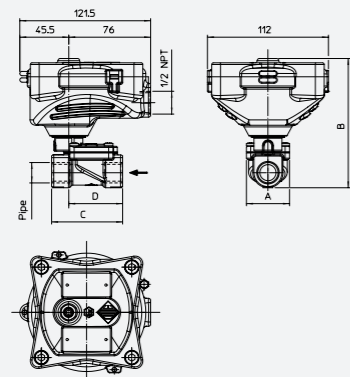
- The fluids listed in the "technical data" tables should be considered as a recommendation. Please check the chemical compatibility of the fluids with the materials of the valve at RFQ stage.
- Operation with gases at high differential pressure can reduce the life of the diaphragm.
- For spare parts list please refer to the dedicated chapter.

DRAWING 3



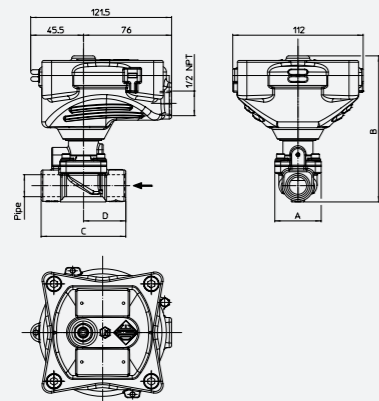
PIPE ISO 228/1	DIMENSIONS [mm]					
	A	B	C	D	E	F
G3/4	65	111	104	36	47	76
G1	65	118	104			
G1 1/4	98	131	144			
G1 1/2	98	131	144			
G2	118	147	162			

DRAWING 4



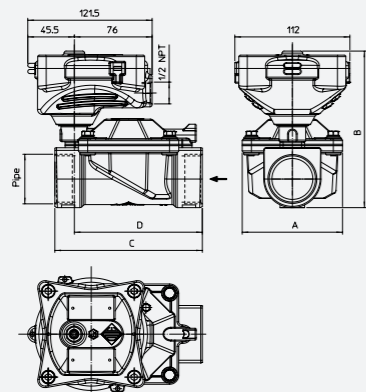
PIPE ISO 228/1	DIMENSIONS [mm]			
	A	B	C	D
G3/8	40	120	60	47
G1/2			66	50

DRAWING 5



PIPE ISO 228/1	DIMENSIONS [mm]			
	A	B	C	D
G1/2	40	120	73	36,5
G3/4	65	136	104	88,5
G1				

DRAWING 6



PIPE ISO 228/1	DIMENSIONS [mm]			
	A	B	C	D
G3/4	65	128	104	89
G1	65	136	104	89
G1 1/4	98	153	144	125
G1 1/2	98	153	144	125
G2	118	144	172	150

PIPE ISO 228/1	ORIFICE SIZE Ø [mm]	Kv [l/min]	COIL SERIES	PRESSURE [bar]			CODE		DRAWING REFERENCE	
				MIN	MOPD		PS	BRASS		STAINLESS STEEL
					AC	DC				
G3/8	13	60	TNA	0,2	16	16	25	21WA3QDV130	-	1
G1/2	12	35	TNA	0,1	16	16	25	-	21X2QDV120	2
	13	70	TNA	0,2	16	16	25	21WA4QDV130	-	1
G3/4	19	130	TNA	0,1	16	16	25	-	21X3QDV190	2
		140	TNA	0,2	16	16	25	21W3QDV190	-	3
G1	25	160	TNA	0,1	16	16	25	-	21X4QDV250	2
		190	TNA	0,2	16	16	25	21W4QDV250	-	3
G1 1/4	35	400	TNA	0,2	10	10	16	21W5QDV350	-	3
G1 1/2	40	520	TNA	0,2	10	10	16	21W6QDV400	-	3
G2	50	750	TNA	0,2	10	10	16	21W7QDV500	-	3

For sealing different from NBR and FKM, replace the letter "B" and "V" with the ones corresponding to the other materials.
Brass Body: V=FKM, F=HNBR
Stainless Steel Body: V=FKM

According to Directive 2014/34/EU ATEX
II 2 G Ex mb IIC T4 Gb
II 2 D Ex mb tb IIIC T130°C Db

PIPE ISO 228/1	ORIFICE SIZE Ø [mm]	Kv [l/min]	COIL SERIES	PRESSURE [bar]			CODE		DRAWING REFERENCE	
				MIN	MOPD		PS	BRASS		STAINLESS STEEL
					AC	DC				
G3/8	13	60	BDV08	0,2	16	16	25	21WA3KIB130	-	4
G1/2	12	35	BDV08	0,1	16	16	25	-	21X2KIV120	5
	13	70	BDV08	0,2	16	16	25	21WA4KIB130	-	4
G3/4	19	130	BDV08	0,1	16	16	25	-	21X3KIV190	5
		140	BDV08	0,2	16	16	25	21W3KIB190	-	6
G1	25	160	BDV08	0,1	16	16	25	-	21X4KIV250	5
		190	BDV08	0,2	16	16	25	21W4KIB250	-	6
G1 1/4	35	400	BDV08	0,2	10	10	16	21W5KIB350	-	6
G1 1/2	40	520	BDV08	0,2	10	10	16	21W6KIB400	-	6
G2	50	750	BDV08	0,2	10	10	16	21W7KIB500	-	6

For sealing different from NBR and FKM, replace the letter "B" and "V" with the ones corresponding to the other materials.
Brass Body: B=NBR, V=FKM, E=EPDM, F=HNBR
Stainless Steel Body: V=FKM, E=EPDM, F=HNBR

PIPE ISO 228/1	ORIFICE SIZE Ø [mm]	Kv [l/min]	COIL SERIES	PRESSURE [bar]			CODE		DRAWING REFERENCE	
				MIN	MOPD		PS	BRASS		STAINLESS STEEL
					AC	DC				
G3/8	13	60	BDV08	0,2	16	16	25	21WA3ZIB130	-	4
G1/2	12	35	BDV08	0,1	16	16	25	-	21X2ZIV120D	5
	13	70	BDV08	0,2	16	16	25	21WA4ZIB130	-	4
G3/4	19	130	BDV08	0,1	16	16	25	-	21X3ZIV190D	5
		140	BDV08	0,2	16	16	25	21W3ZIB190	-	6
G1	25	160	BDV08	0,1	16	16	25	-	21X4ZIV250D	5
		190	BDV08	0,2	16	16	25	21W4ZIB250	-	6
G1 1/4	35	400	BDV08	0,2	10	10	16	21W5ZIB350	-	6
G1 1/2	40	520	BDV08	0,2	10	10	16	21W6ZIB400	-	6
G2	50	750	BDV08	0,2	10	10	16	21W7ZIB500	-	6

For sealing different from NBR and FKM, replace the letter "B" and "V" with the ones corresponding to the other materials.
Brass Body: B=NBR, V=FKM, E=EPDM, F=HNBR
Stainless Steel Body: V=FKM, E=EPDM, F=HNBR

According to Directive 2014/34/EU ATEX
II 2G Ex d IIC T6 o T5 Gb
II 2D Ex tb IIIC T80°C o T95°C Db IP67

Ex mb - 2/2 NC

Ex d - 2/2 NC

Ex d - 2/2 NO

	I	II	III	IV	V	VI	VII	VIII
CODIFICATION	2	1	WA	3	QD	B	130	-
I. NUMBER OF WAYS	2 - 2-way			IV. CONNECTIONS			V. CORE TUBE TYPE	
II. NUMBER OF ELEMENTS	1 - 1 element			for WA series			QD - 2/2 NC, 'mb' protection type	
III. SERIES	WA - G3/8 and G1/2, brass body			3 - G3/8			KI - 2/2 NC, 'd' protection type	
	W - above G1/2, brass body			4 - G1/2			ZI - 2/2 NO, 'd' protection type	
	X - StSt body			for W and X series			VI. SEALING MATERIAL	
				3 - G3/4			V - FKM	
				4 - G1			E - EPDM	
				5 - G1 1/4			B - NBR	
				6 - G1 1/2			F - HNBR	
				7 - G2			VII. ORIFICE Ø [mm] MULTIPLIED BY 10	
				8 - G2 1/2			VIII. OPTIONS	
				9 - G3			OX - degreasing for industrial oxygen use	

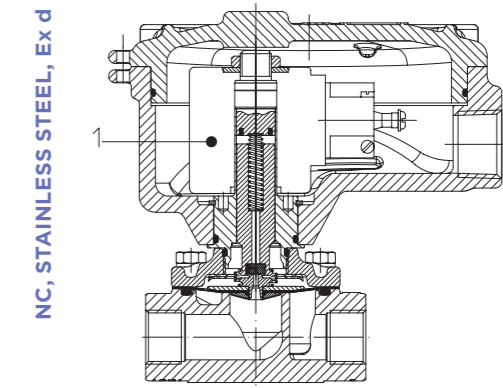
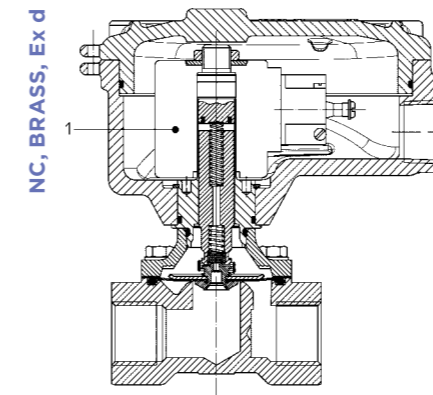
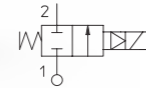
OPTION	PROTECTION TYPE	BODY MATERIAL	SEALING MATERIAL	VALVE SIZE/CONNECTIONS							NOTES
				G3/8	G1/2	G3/4	G1	G1 1/4	G1 1/2	G2	
OX	'D'	BRASS & STST	V	X	X	X	X	X	X	X	PS & MOPD limited to 25 bar. Shall not be used as safety valves

■ Please contact ODE if you wish to combine more options.

21HT - 21IH SERIES

Solenoid Valves, 2-way, Combined acting

21HT, 21HF and **21IH** are combined acting solenoid valves which do not require a minimum operating pressure differential. These valves are suitable for vacuum operations. 21HT series is provided with fiber reinforced diaphragms for optimized durability.



Atex ■ Solenoid Valves ■ 2-way ■ Combined acting ■ 21HT - 21IH SERIES



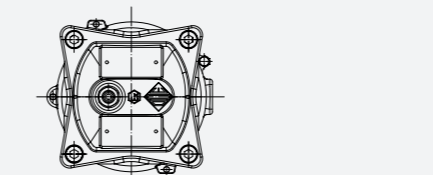
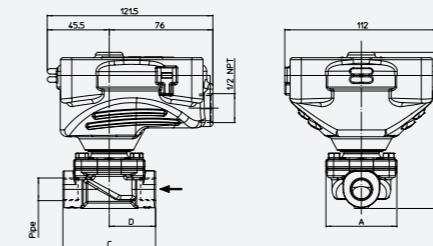
TECHNICAL DATA

PORT CONNECTION	G 3/8 ÷ G 1 1/2		
SEALING MATERIALS	NBR+PA		FKM+PA
FLUID TEMPERATURE	-10°C + 90°C		-10°C + 140°C
FLUIDS	AIR, INERT GASES, WATER		oils, gasoline, diesel
VISCOSITY	max. 12 cSt		
TUBE Ø - COIL WIDTH - SERIES	Ex d	ø 13 mm - 30 mm	BDV08 (class H)
INSTALLATION	as required, preferably with actuator upright		
PROTECTION DEGREE	Ex d	IP67 EN 60529 (DIN 40050) with cable gland IP67 or higher	

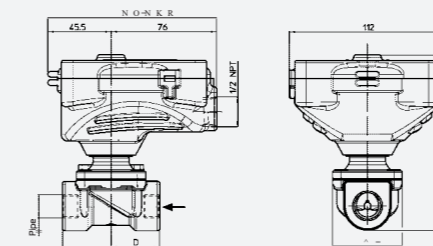
MATERIALS

BODY, ORIFICE	Brass UNI EN 12165 CW617N or stainless steel AISI 316		
ARMATURE TUBE	Stainless steel AISI Series 300		
FIXED CORE	Stainless steel AISI Series 400		
PLUNGER	Stainless steel AISI Series 400		
PHASE DISPLACEMENT RING	Copper (Cu 99,9%) or gold plated copper		
SPRING	Stainless steel AISI Series 300		
SEALING	Y=NBR+PA, V=FKM+PA		

DRAWING 1



DRAWING 2



PIPE ISO 228/1	DIMENSIONS [mm]			
	A	B	C	D
G3/8	50	113	56	28
G1/2	50	125	70	35
G3/4	50	125	70	35
G1	65	131	104	52

PIPE ISO 228/1	DIMENSIONS [mm]			
	A	B	C	D
G3/8	52	114,5	68	34
G1/2	52	114,5	68	34
G3/4	58	123	75	37,5
G1	65	131	90	45
G1 1/4	94	126,5	128	64
G1 1/2	94	126,5	128	64

CE

- 2014/35/EU (LVD)
- 2014/30/EU (EMC)
- 2014/68/EU (PED) art. 4.3 up to 1", cat. I module A above 1"
- 2014/34/EU (ATEX). Refer to next pages for the complete marking.

INDUSTRIAL OXYGEN

Special versions suitable for contact with industrial oxygen are available. Please refer to codification options.

UL recognized and VDE, CSA

approved coils are available for this series, please refer to coil section.

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■ The fluids listed in the "technical data" tables should be considered as a recommendation. Please check the chemical compatibility of the fluids with the materials of the valve at RFQ stage.
 ■ For spare parts list please refer to the dedicated chapter.

Ex d - 2/2 NC

PIPE	ORIFICE SIZE	Kv	COIL SERIES	PRESSURE [bar]			CODE		DRAWING REFERENCE	
				MIN	MOPD		PS	BRASS		STAINLESS STEEL
					AC	DC				
G3/8	11	20	BDV08	0	14	5	16	21HT3KIY110	-	1
	15	40	BDV08	0	14	6	16	-	21H3KIV150	2
G1/2	16	40	BDV08	0	14	5	16	21HT4KIY160	-	1
		50	BDV08	0	14	6	16	-	21H4KIV160	2
G3/4	16	40	BDV08	0	14	5	16	21HT5KIY160	-	1
		60	BDV08	0	14	6	16	-	21H6KIV200	2
G1	25	120	BDV08	0	6	-	16	21HT6KIY250	-	1
		140	BDV08	0	14	3	16	-	21H6KIV250	2
G1 1/4	35	300	BDV08	0	8	-	16	-	21H7KIV350	2
G1 1/2	40	320	BDV08	0	8	-	16	-	21H8KIV400	2

According to Directive 2014/34/EU ATEX
 II 2G Ex d IIC T6 o T5 Gb
 II 2D Ex tb IIIC T80°C o T95°C Db IP67

I	II	III	IV	V	VI	VII
2	1	HT	3	K	Y	110

I. NUMBER OF WAYS
2 - 2-way

II. NUMBER OF ELEMENTS
1 - 1 element

III. SERIES
HT - Brass body
IH - StSt body

IV. CONNECTIONS
3 - G3/8
4 - G1/2
5 - G3/4
6 - G1
7 - G1 1/4
8 - G1 1/2

V. CORE TUBE TYPE
KI - for 2/2 NC valves, Ex d

VI. SEALING MATERIAL for HT and IH series
Y - NBR+PA
V - FKM+PA

VII. ORIFICE Ø [mm] MULTIPLIED BY 10

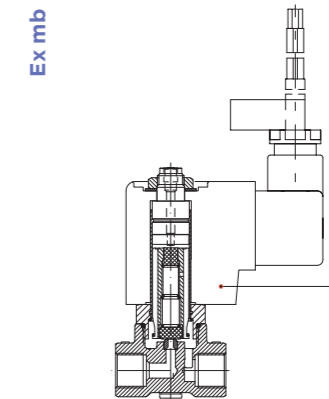
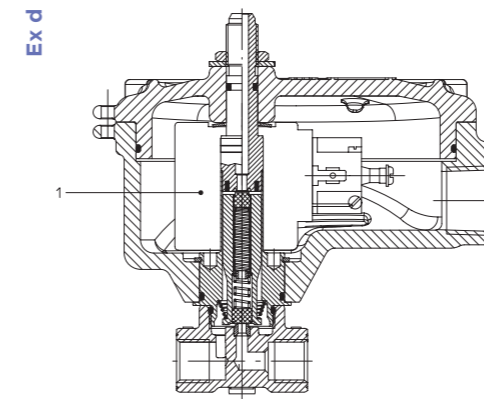
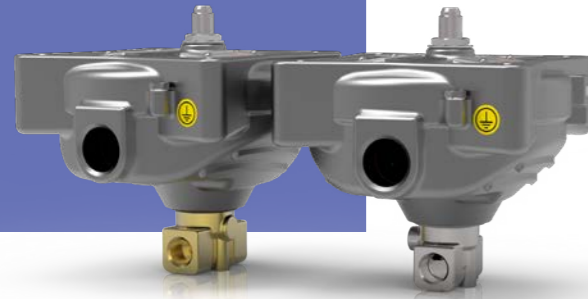
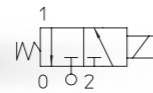
CODIFICATION

■ For sealing different from NBR+PA or FKM+PA replace the letter "Y" and "V" with the ones corresponding to the other materials.
 Y = NBR+PA, V = FKM + PA.

31A - 31L SERIES

Solenoid valves, 3-way, Direct acting

31A and **31L** are 3-way, direct acting solenoid valves. The fixed core and armature tube are welded together to enhance pressure resistance and leak-tightness. A large selection of seal materials provides wide chemical compatibility.



Atex ■ Solenoid Valves ■ 3-way ■ Direct acting ■ **31A - 31L SERIES**

TECHNICAL DATA

PORT CONNECTION	G 1/4 ÷ G 1/8	
SEALING MATERIALS	FKM	HNBR
FLUID TEMPERATURE	-10°C + 80°C	-30°C + 80°C
FLUIDS	air, inert gases, water, oils, gasoline, diesel	air, inert gases, water, R134a, R404a
VISCOSITY	12 cSt up to orifice 1.5 mm, 37 cSt for orifice 2.0 mm, 53 cSt for orifice 2.5 mm and above	
TUBE Ø - COIL WIDTH - SERIES	Ex mb	ø 14 mm - 36 mm TNA (class F)
	Ex d	ø 13 mm - 30 mm BDV08 (CLASS H)
INSTALLATION	as required, preferably with actuator upright	
PROTECTION DEGREE	Ex mb	IP65 EN 60529 (DIN 40050)
	Ex d	IP67 EN 60529 (DIN 40050) with cable gland IP67 or higher

MATERIALS

BODY	Brass UNI EN 12165 CW617N or stainless steel AISI 316
ORIFICE	Stainless steel AISI series 300 for brass body AISI 316 for stainless steel body
ARMATURE TUBE	Stainless steel AISI Series 300
FIXED CORE	Stainless steel AISI Series 400
PLUNGER	Stainless steel AISI Series 400
PHASE DISPLACEMENT RING	Copper (Cu 99.9%) or gold plated copper
SPRING	Stainless steel AISI Series 300
SEALING	V=FKM, F=HNBR

CE

- 2014/35/EU (LVD)
- 2014/30/EU (EMC)
- 2014/68/EU (PED) art. 4.3 up to 1",
- 2014/34/EU (ATEX). Refer to next pages for the complete marking

INDUSTRIAL OXYGEN

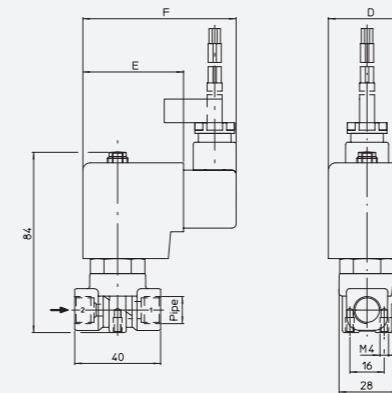
Special versions suitable for contact with industrial oxygen are available. Please refer to codification options.

UL recognized and VDE, CSA

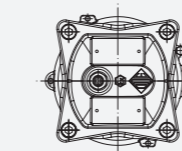
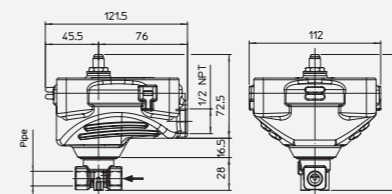
approved coils are available for this series, please refer to coil section.

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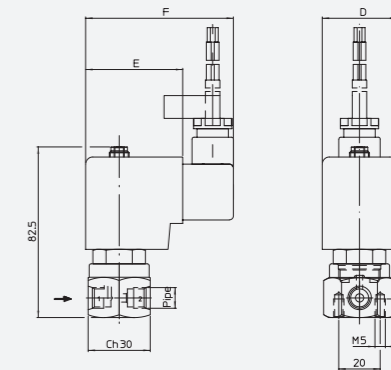
DRAWING 1



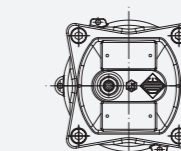
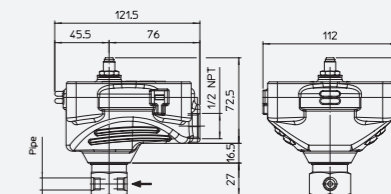
DRAWING 3



DRAWING 2



DRAWING 4



PIPE	DIMENSIONS [mm]		
	D	E	F
ISO 228/1			
G1/8	36	47	76
G1/4			

■ The fluids listed in the "technical data" tables should be considered as a recommendation. Please check the chemical compatibility of the fluids with the materials of the valve at RFQ stage.
 ■ For spare parts list please refer to the dedicated chapter.

Ex mb - 3/2 NC

PIPE	ORIFICE SIZE	Kv	COIL SERIES	PRESSURE [bar]			CODE		DRAWING REFERENCE	
				MIN	MOPD		PS	BRASS		STAINLESS STEEL
					AC	DC				
G1/8	1,5	1,2	TNA	0	15	15	40	31A3PDV15	-	1
	2	2	TNA	0	10	10	40	31A3PDV20	-	1
	2,5	3	TNA	0	6	6	40	31A3PDV25	-	1
	3	3,5	TNA	0	5	5	40	31A3PDV30	-	1
G1/4	1,5	1,2	TNA	0	15	15	40	31A2PDV15	-	1 (BRASS), 3 (STST)
	2	2	TNA	0	10	10	40	31A2PDV20	31L2PDV20	1 (BRASS), 3 (STST)
	2,5	3	TNA	0	6	6	40	31A2PDV25	31L2PDV25	1 (BRASS), 3 (STST)
	3	3,5	TNA	0	5	5	40	31A2PDV30	31L2PDV30	1 (BRASS), 3 (STST)

3rd way exhaust Ø 3 mm for all orifice sizes.

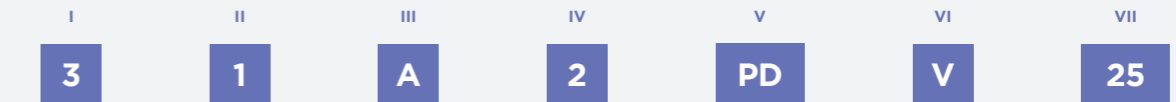
According to Directive 2014/34/EU ATEX
 II 2 G Ex mb IIC T4 Gb
 II 2 D Ex mb tb IIIC T130°C Db

Ex d - 3/2 NC

PIPE	ORIFICE SIZE	Kv	COIL SERIES	PRESSURE [bar]			CODE		DRAWING REFERENCE	
				MIN	MOPD		PS	BRASS		STAINLESS STEEL
					AC	DC				
G1/8	1	0,45	BDV08	0	20	20	40	31A3EIV10	-	3
	1,5	1,4	BDV08	0	15	15	40	31A3EIV15	-	3
	2	2	BDV08	0	10	10	40	31A3EIV20	-	3
	2,5	3,2	BDV08	0	6	6	40	-	31L1EIV20	4
	3	4	BDV08	0	5	5	40	31A3EIV30	-	3
G1/4	1	0,45	BDV08	0	20	20	40	31A2EIV10	-	3
	1,5	1,4	BDV08	0	15	15	40	31A2EIV15	-	3
	2	2	BDV08	0	10	10	40	31A2EIV20	31L2EIV20	3
	2,5	3,2	BDV08	0	6	6	40	31A2EIV25	-	3
	3	4	BDV08	0	5	5	40	31A2EIV30	31L2EIV30	3

3rd way exhaust Ø 3 mm for all orifice sizes.

According to Directive 2014/34/EU ATEX
 II 2G Ex d IIC T6 o T5 Gb
 II 2D Ex tb IIIC T80°C o T95°C Db IP67



I. NUMBER OF WAYS
 3 - 3-way

II. NUMBER OF ELEMENTS
 1 - 1 element

III. SERIES
 A - brass body, Ø13 mm core tube
 L - StSt body, Ø13 mm core tube

IV. CONNECTIONS
 for A series
 3 - G1/8
 2 - G1/4
 for L series
 1 - G1/8
 2 - G1/4

V. CORE TUBE TYPE
 PD - 3/2 NC, 'mb' protection type
 EI - 3/2 NC, 'd' protection type

VI. SEALING MATERIAL
 V - FKM
 F - HNBR

VII. ORIFICE Ø [mm] MULTIPLIED BY 10

OPTION	PROTECTION TYPE	BODY MATERIAL	SEALING MATERIAL	VALVE SIZE/CONNECTIONS		NOTES
				G1/8	G1/4	
OX	'd'	Brass & StSt	V	X	X	PS & MOPD limited to 25 bar. Shall not be used as safety valves

CODIFICATION

OPTIONS AVAILABILITY

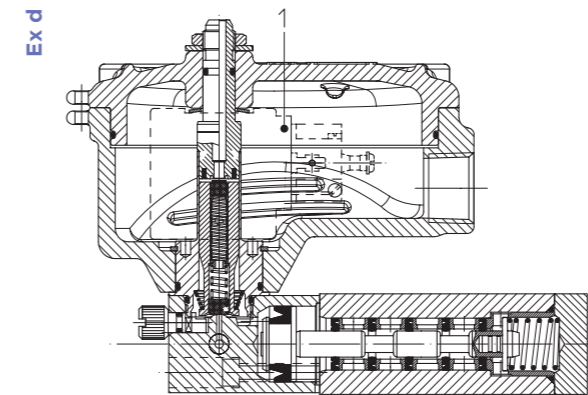
For sealing different from FKM, replace the letter "V" with the ones corresponding to the other materials.
 V= FKM, F=HNBR.

Please contact ODE if you wish to combine more options.

51 SERIES

Solenoid valves, 5-way, Indirect acting

The **51 series** are 5/2, solenoid operated, spool valves available with threaded port connections and NAMUR interface. Specific surface treatments and proven construction ensure protection against environmental corrosion and product reliability. A minimum operating pressure of 0.7 bar is required.



Atex ■ Solenoid Valves ■ 5-way ■ Indirect acting ■ **51 SERIES**

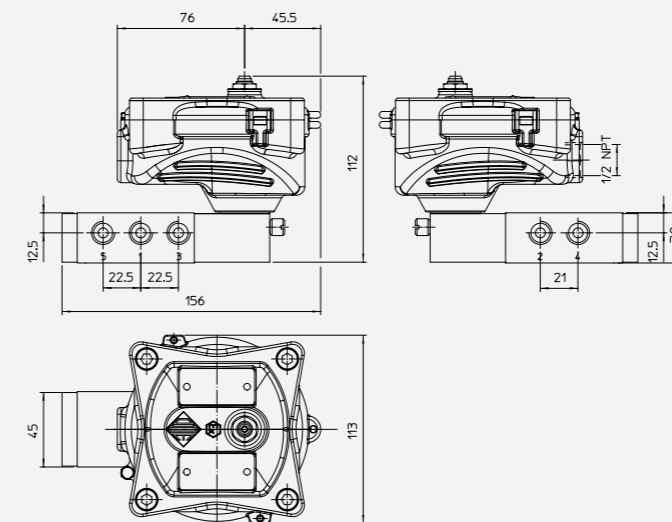
TECHNICAL DATA

PORT CONNECTION	G 1/4		
SEALING MATERIALS	NBR		
FLUID TEMPERATURE	-10°C +90°C		
FLUIDS	Lubricated air		
VISCOSITY	-		
TUBE Ø - COIL WIDTH - SERIES	Ex d	ø 13 mm - 30 mm	BDV08 (class H)
INSTALLATION	as required, preferably with actuator upright		
PROTECTION DEGREE	Ex d	IP67 EN 60529 (DIN 40050) with cable gland IP67 or higher	

MATERIALS

BODY, ORIFICE	Anodized aluminum		
ARMATURE TUBE	Stainless steel AISI Series 300		
FIXED CORE	Stainless steel AISI Series 400		
PLUNGER	Stainless steel AISI Series 400		
PHASE DISPLACEMENT RING	Copper (Cu 99.9%) or gold plated copper		
SPRING	Stainless steel AISI Series 300		
SEALING	B=NBR		

DRAWING 1



PIPE	ORIFICE SIZE	Kv	COIL SERIES	PRESSURE [bar]			CODE		DRAWING REFERENCE	
				MIN	MOPD		BRASS	STAINLESS STEEL		
ISO 228/1	Ø [mm]	[l/min]		AC	DC	PS				
G1/4	6	6,5	BDV08	1,3	10	10	10	515620EIB15-2	1	1

Ex According to Directive 2014/34/EU ATEX
 II 2G Ex d IIC T6 o T5 Gb
 II 2D Ex tb IIIC T80°C o T95°C Db IP67

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- CE**
 - 2014/35/EU (LVD)
 - 2014/30/EU (EMC)
 - 2014/68/EU (PED) art. 4.3 up to 1",
 - 2014/34/EU (ATEX). Refer to next pages for the complete marking
- INDUSTRIAL OXYGEN**
 Special versions suitable for contact with industrial oxygen are available. Please refer to codification options.
- UL** recognized and **VDE, CSA** approved coils are available for this series, please refer to coil section.

■ The fluids listed in the "technical data" tables should be considered as a recommendation. Please check the chemical compatibility of the fluids with the materials of the valve at RFQ stage.
 ■ For spare parts list please refer to the dedicated chapter.

P992219

Accessories, cable gland

Cable glands for unarmoured cable, outer seal.
The gasket ring seals and blocks cable on the outer sheath



Atex ■ Accessories ■ Cable Gland ■ P992219

TECHNICAL DATA

CODE	P992219/E	P992219/S
CONNECTION	1/2 NPT	1/2 NPT
BODY MATERIAL	NICKEL PLATED BRASS	NICKEL PLATED BRASS
SEALING MATERIAL	EPDM	VMQ
CABLE DIAMETER	FROM Ø 4 TO Ø 6	FROM Ø 4 TO Ø 7
	FROM Ø 6 TO Ø 8	FROM Ø 7 TO Ø 10
	FROM Ø 8 TO Ø 10	
AMBIENT TEMPERATURE	-40°C +100°C	-70°C +220°C
PROTECTION DEGREE	IP 66/68	IP 66/68



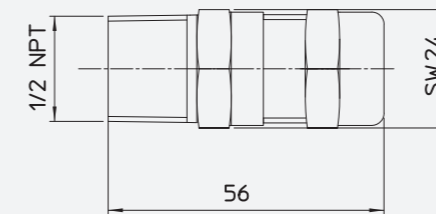
According to Directive 2014/34/EU ATEX

II 2 GD

For indoor and outdoor applications

Group II, category 2G, Zone 1, 2 - presence of explosive gas atmospheres

Group II, category 2D, Zone 21, 22 - presence of combustible dust zone



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4 PROPORTIONAL TECHNOLOGY

2-WAY

SOLENOID VALVES

21A - 21L - 21AP SERIES 225

2-WAY

PNEUMATIC VALVES

21IA SERIES 229

3-WAY

MOTORIZED VALVES

21JNIS SERIES 233

MOTORIZED VALVES SYSTEM

DPS SYSTEM 235

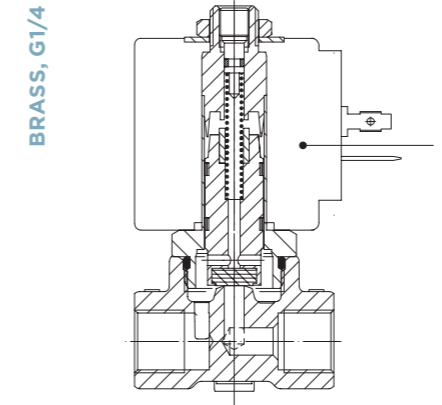
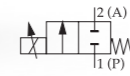


Your Gateway to Excellence

21A - 21L - 21AP SERIES

Solenoid valves, 2-way

Proportional solenoid valves are designed to provide a flowrate output proportional to current change. The valves have elastomeric sealing that ensure tight closure up to the maximum pressure. Minimum operational pressure is not required. Material used and frictionless plunger construction ensure reliability and long life time. The valves can be controlled through the duty cycle of a 24 VDC PWM signal or directly by regulating the current applied to the coil.



Proportional technology ■ Solenoid valves ■ 2-way ■ 21A - 21L - 21AP SERIES

TECHNICAL DATA

PORT CONNECTION	G1/8 ÷ G1/4, PUSH-IN connections	
SEALING MATERIALS	FKM	EPDM
FLUID TEMPERATURE	-10°C +140°C	-10°C +140°C
FLUIDS	air, water, inert gases, mineral oils	air, water, inert gases
VISCOSITY	12 cSt up to orifice 1.5 mm, 37 cSt for orifice 2.0 mm, 53 cSt for orifice 2.5 mm and above	
TUBE Ø - COIL WIDTH - SERIES	ø 13 mm - 30 mm	BDA08, BVA08 (CLASS F), BDV08 (CLASS H)
	ø 13 mm - 36 mm	UDV16 (CLASS H)
	ø 13 mm - 52 mm	GDV14 (CLASS H)
PROTECTION DEGREE	IP65 EN 60529 (DIN 40050) with plug connector	
VOLTAGE REGULATION	24 V DC pulse width modulation (600 ÷ 800 Hz)	
HYSTERESIS	< 5%	
REPEATABILITY	< 3%	
SENSITIVITY	< 2%	

MATERIALS

BODY, ORIFICE	Brass UNI EN 12165 CW617N or stainless steel AISI 316 or PPS
ARMATURE TUBE	Stainless steel AISI 316
FIXED CORE	Stainless steel AISI Series 400
PLUNGER	Stainless steel AISI Series 400
PHASE DISPLACEMENT RING	-
SPRING	Stainless steel AISI Series 300
SEALING	V=FKM, E=EPDM

CE

- 2014/35/EU (LVD)
- 2014/30/EU (EMC)
- 2014/68/EU (PED) art. 4.3 up to 1",
cat. I module A above 1"

INDUSTRIAL OXYGEN

Special versions suitable for contact with industrial oxygen are available. Please refer to codification options.

UL, VDE, CSA

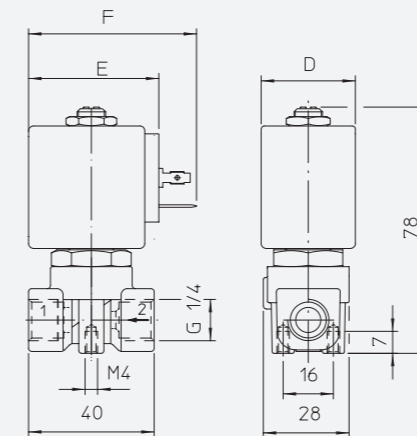
UL recognized and VDE, CSA approved coils are available for this series, please refer to coil section.

NSF/ANSI 169

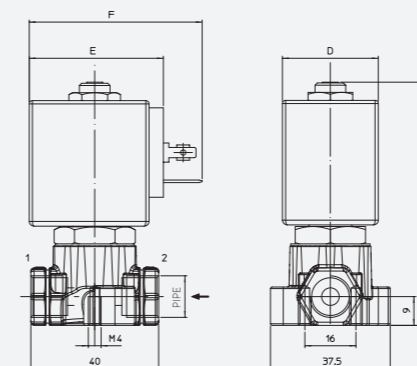
certification (Special Food Equipment and Devices) is available for this series. Please find the correspondend symbol in the next pages. Valves with NSF approval are in compliance with CE regulation 1935/2004.

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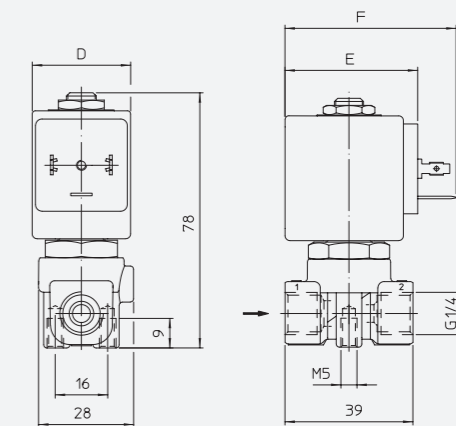
DRAWING 1



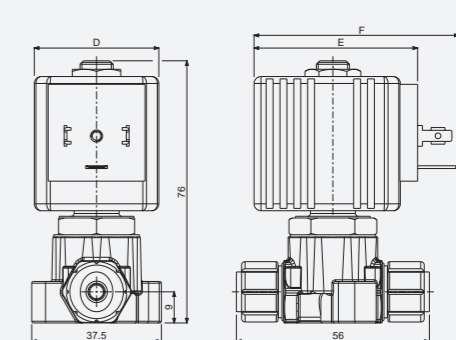
DRAWING 3



DRAWING 2



DRAWING 4



COILS SERIES	DIMENSIONS [mm]		
	D	E	F
B**08	30	42	54
UDV16	36	48	60

■ The fluids listed in the "technical data" tables should be considered as a recommendation. Please check the chemical compatibility of the fluids with the materials of the valve at RFQ stage.
■ Please check the engineering information for further details on viscosity.
■ These solenoid valves are not suitable for stagnating fluids, or for fluids that being subject to evaporation may deposit solid, calcareous or similar residues.
■ For control options please refer to +SMART chapter.

■ The valves can be maintained in a stable position only if the current circulating in the coil is kept constant. If the valve is controlled through voltage variation, it is necessary to compensate the power decrease due to heating effect by increasing the voltage, so to re-establish the initial current value.

2/2 PROPORTIONAL BRASS AND STAINLESS STEEL BODY

PIPE ISO 228/1	ORIFICE SIZE Ø [mm]	Kv [l/min]	COIL SERIES	PRESSURE [bar]		CODE		DRAWING REFERENCE	
				MIN	MOPD (DC)	BRASS	STAINLESS STEEL		
G1/4	1,0	1,4	B**08	0	4	21A2KCV10-04	-	1	
			UDV16	0	4	21A2KCV10-04	-	1	
		0,45	B**08	0	10	21A2KCV10-10	-	1	
			UDV16	0	10	21A2KCV10-10	-	1	
		1,5	1,4	B**08	0	10	21A2KCV15-10	-	1
				UDV16	0	10	21A2KCV15-10	-	1
	2,0	2	B**08	0	4	21A2KCV20-04	-	1	
			UDV16	0	4	21A2KCV20-04	-	1	
		2	B**08	0	6	21A2KCV20-06	-	1	
			UDV16	0	-	-	-	-	
		2	2	B**08	0	10	21A2KCV20-10	21L2KCV20-10	1 (brass), 2 (StSt)
				UDV16	0	10	21A2KCV20-10	-	1
		2	2	B**08	0	12	21A2KCV20-12	-	1
				UDV16	0	-	-	-	-
		2,5	2,5	B**08	0	8	21A2KCV25-08	-	1
				UDV16	0	8	21A2KCV25-08	-	1
		3,0	4	B**08	0	5	21A2KCV30-05	-	1
				UDV16	0	5	21A2KCV30-05	-	1
	4		B**08	0	6,5	21A2KCV30-6X	21L2KCV30-6X	1 (brass), 2 (StSt)	
			UDV16	0	6,5	21A2KCV30-6X	-	1	
	4,5	6,5	B**08	0	1,5	21A2KCV45-1X	21L2KCV45-1X	1 (brass), 2 (StSt)	
			UDV16	0	1,5	21A2KCV45-1X	21L2KCV45-1X	1 (brass), 2 (StSt)	
		6,4	UDV16	0	2	21A2KCV45-02	-	1	
			GDV14	0	2	21A2KCV45-02	-	1	
6,5		UDV16	0	2,5	21A2KCV45-2X	-	1		
		GDV14	0	2,5	21A2KCV45-2X	21L2KCV45-2X	1 (brass), 2 (StSt)		
5,5	9	UDV16	0	1	21A2KCV55-01	-	1		
		GDV14	0	1	21A2KCV55-01	-	1		

For sealing different from FKM, replace the letter "V" with the ones corresponding to the other materials.
V= FKM, E=EPDM.

PIPE ISO 228/1	ORIFICE SIZE Ø [mm]	Kv [l/min]	COIL SERIES	PRESSURE [bar]		CODE PPS	DRAWING REFERENCE
				MIN	MOPD (DC)		
G1/8	1,5	1,1	B**08	0	10	21AP1KCV15-10	3
	2,5	2,5	UDV16	0	5	21AP1KC4V25-1FTO ^{NSF}	3
	3,0	3,4	B**08	0	5	21AP1KC4V30-1BTO ^{NSF}	3
			UDV16	0	5	21AP1KC4V30-1BTO ^{NSF}	3
			B**08	0	1	21AP1KC4V30-1CTO ^{NSF}	3
			UDV16	0	1	21AP1KC4V30-1CTO ^{NSF}	3
G1/4	1,5	1,4	B**08	0	8	21AP2KC4V15-1Q	3
			B**08	0	8	21AP2KC4V15-1QTO ^{NSF}	3
	2	1,8	UDV16	0	10	21AP2KCV20-10	3
			B**08	0	5	21AP2KCV30-05	3
	3,0	3,4	UDV16	0	5	21AP2KCV30-05	3
			PUSH-IN Ø6 mm	3,0	3,4	UDV16	0

2/2 PROPORTIONAL PPS BODY

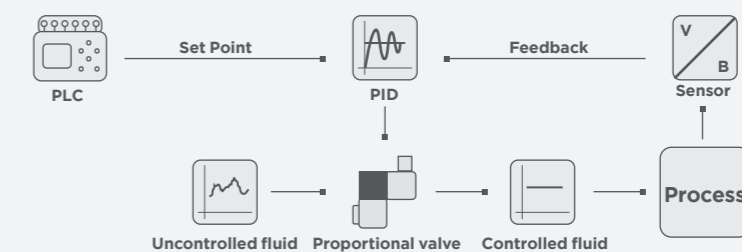


- I. NUMBER OF WAYS**
2 - 2-way
- II. NUMBER OF ELEMENTS**
1 - 1 element
- III. SERIES**
A - brass body, Ø13 mm core tube
AP - PPS body, Ø13 mm core tube
L - StSt body, Ø13 mm core tube
- IV. CONNECTIONS**
2 - G1/4
3 - G1/8
6 - PUSH IN for OD 6 mm (only for AP series)
- V. CORE TUBE TYPE**
KC - for 2/2 proportional valves
- VI. PHASE DISP. RING MATERIAL**
blank - without
4 - without (for NSF approved valves)
- VII. SEALING MATERIAL**
V - FKM
E - EPDM
- VIII. ORIFICE Ø [mm] MULTIPLIED BY 10**
- IX. MAXIMUM PRESSURE**
12 - 12 bar
10 - 10 bar
08 - 8 bar
6X - 6,5 bar
05 - 5 bar
04 - 4 bar
2X - 2,5 bar
02 - 2 bar
1X - 1,5 bar
01 - 1 bar
For NSF approved valves
1Q - 8 bar
1F - 5 bar
1B - 5 bar
1I - 2,6 bar
1C - 1 bar
- X. NSF CERTIFICATION**
TO - PPS body

CODIFICATION

+SMART ONE
+SMART CUBE

For control options please refer to +SMART chapter.

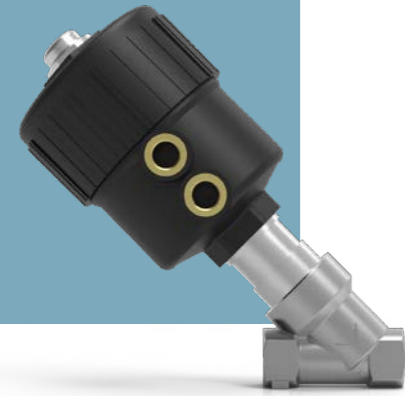
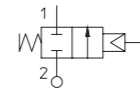


211A SERIES

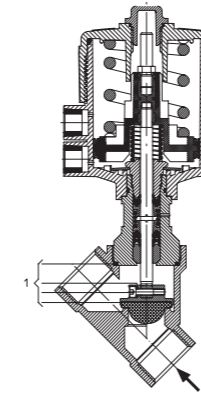
Pneumatic valves, 2-way

211A are pneumatically actuated proportional angle seat valves that come with:

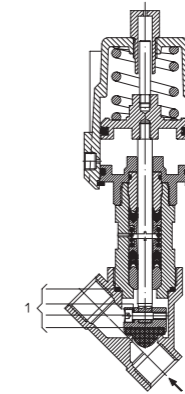
- dedicated seal shape to ensure a linear flow diaphragm
- optimized body design for high flow rate
- corrosion resistant body and actuator housing
- optical position indicator
- self adjusting stem packing for long service life
- 360° adjustable actuator



PROPORTIONAL, PA66 ACTUATOR



PROPORTIONAL, STAINLESS STEEL ACTUATOR



Proportional technology ■ Pneumatic valves ■ 2-way ■ 211A SERIES



TECHNICAL DATA

PIPES	G 1/2 ÷ G 1
ACTUATOR SIZE	Ø 50 ÷ 70 mm
FLOW DIRECTION	below seat
FLUID TEMPERATURE	-40°C +180°C
AMBIENT TEMPERATURE	-10°C +80°C
VISCOSITY	max 600 cSt
PILOT FLUID	dry or lubricated air and neutral fluids
PILOT FLUID TEMPERATURE	max +60°C

MATERIALS

VALVE BODY	stainless steel AISI 316
MAIN SEAL	PTFE
STEM PACKING	PTFE, FKM
ACTUATOR HOUSING	glass fibre reinforced PA66 or stainless steel AISI 316
ACTUATOR GASKETS	NBR

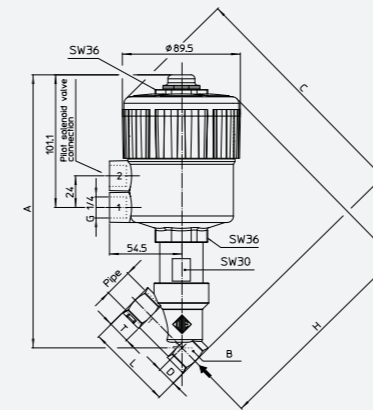
2/2 PROPORTIONAL

PIPE ISO 228/1	ORIFICE SIZE Ø [mm]	Kv [l/min]	ACTUATOR Ø [mm]	ACTUATOR PILOT PRESSURE [bar]		DIFFERENTIAL PRESSURE [bar]		MAX ALLOWABLE PRESSURE [bar] PS	CODE	WEIGHT kg	DRAWING REFERENCE
				MIN	MAX	MIN	MAX				
G1/2	15	70	70	0	10	0	16	40	211A4T15GP2	1,4	1
G3/4	20	130	70	0	10	0	10	40	211A5T20GP2	1,5	1
G1	25	150	70	0	10	0	10	40	211A6T25GP2	1,8	1

2/2 PROPORTIONAL WITH STAINLESS STEEL ACTUATOR

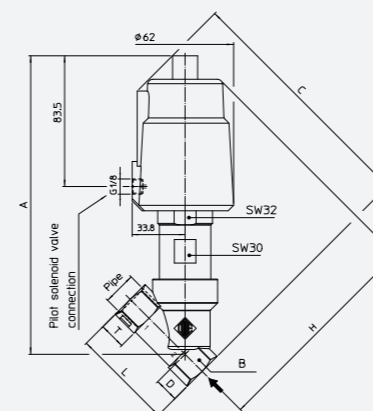
PIPE ISO 228/1	ORIFICE SIZE Ø [mm]	Kv [l/min]	ACTUATOR Ø [mm]	ACTUATOR PILOT PRESSURE [bar]		DIFFERENTIAL PRESSURE [bar]		MAX ALLOWABLE PRESSURE [bar] PS	CODE	WEIGHT kg	DRAWING REFERENCE
				MIN	MAX	MIN	MAX				
G1/2	15	70	50	0	8	0	16	40	211A4T15GP1-5	1,6	2
G3/4	20	110	50	0	8	0	10	40	211A5T20GP1-5	1,7	2
G1	25	130	50	0	8	0	9	40	211A6T25GP1-5	2,1	2

DRAWING 1



PIPE ISO 228/1	ACTUATOR Ø	DIMENSIONS [mm]						
		A	B	C	D	H	L	T
G1/2	70	206,8	SW27	178,7	15,4	163,3	65	17
G3/4	70	211,7	SW32	188,6	21,9	166,7	75,5	19
G1	70	220,1	SW41	197,8	25,1	172,7	90	21

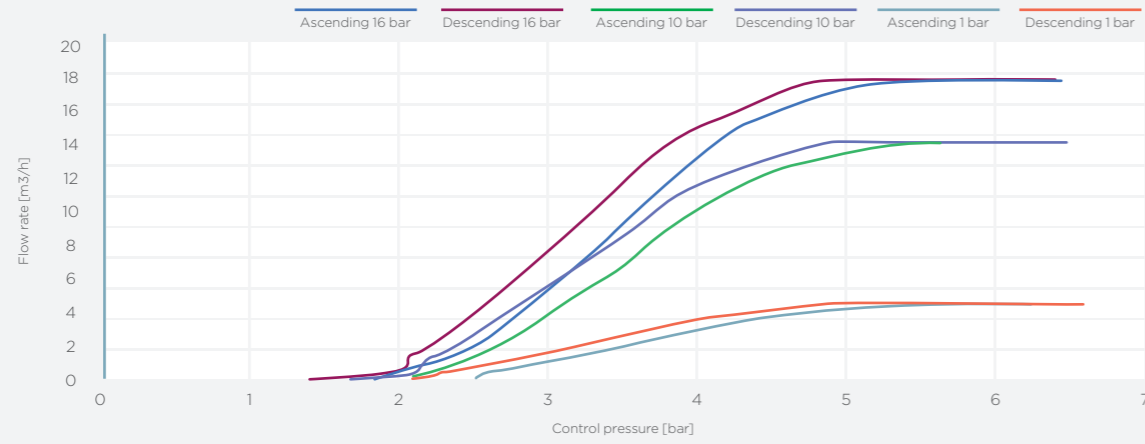
DRAWING 2



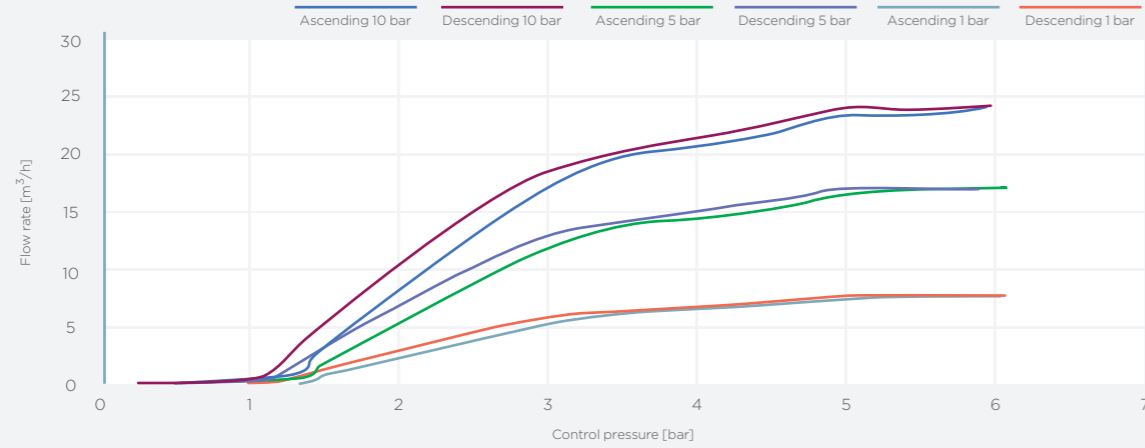
PIPE ISO 228/1	ACTUATOR Ø	DIMENSIONS [mm]						
		A	B	C	D	H	L	T
G1/2	50	190,6	SW27	156	15,4	139,7	65	17
G3/4	50	190,8	SW32	162	21,4	139,8	75	19
G1	50	200,3	SW41	168	25	146,6	90	20,5

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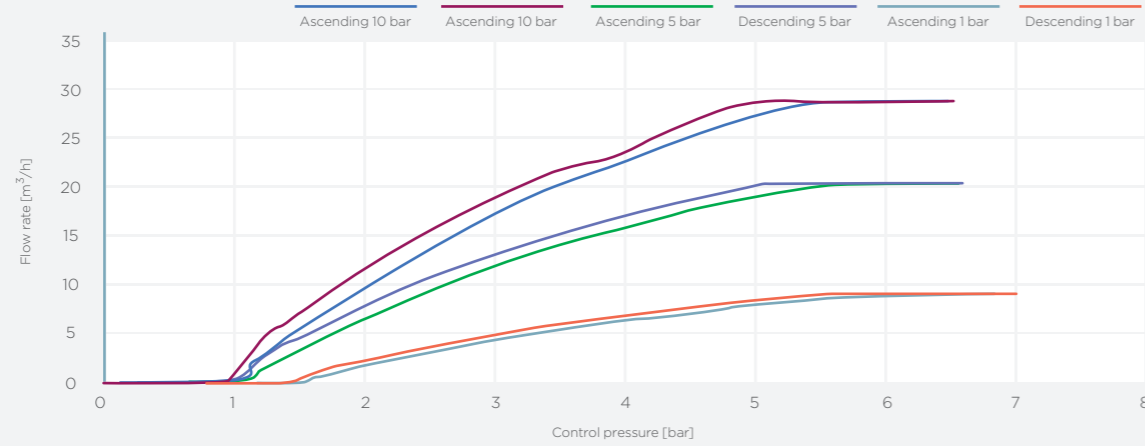
DN15 ACTUATOR 70 mm



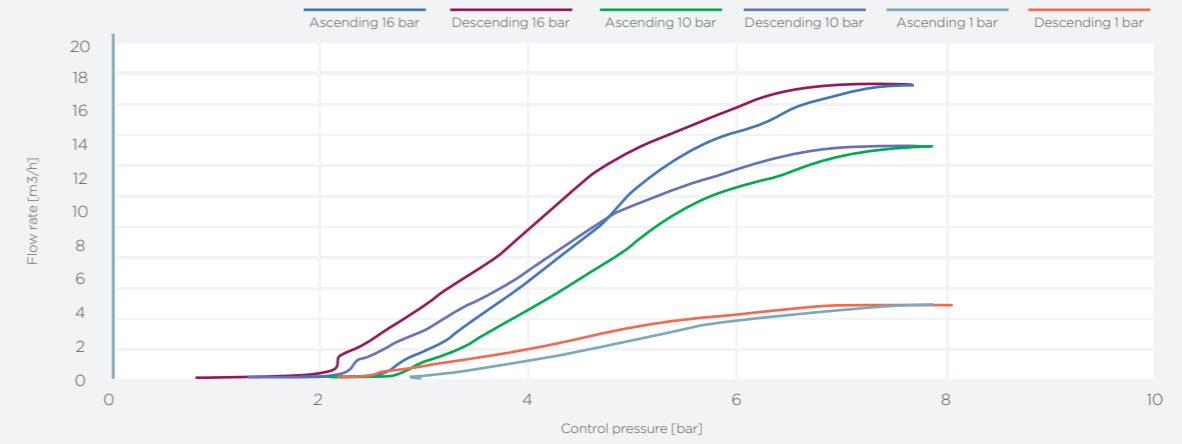
DN20 ACTUATOR 70 mm



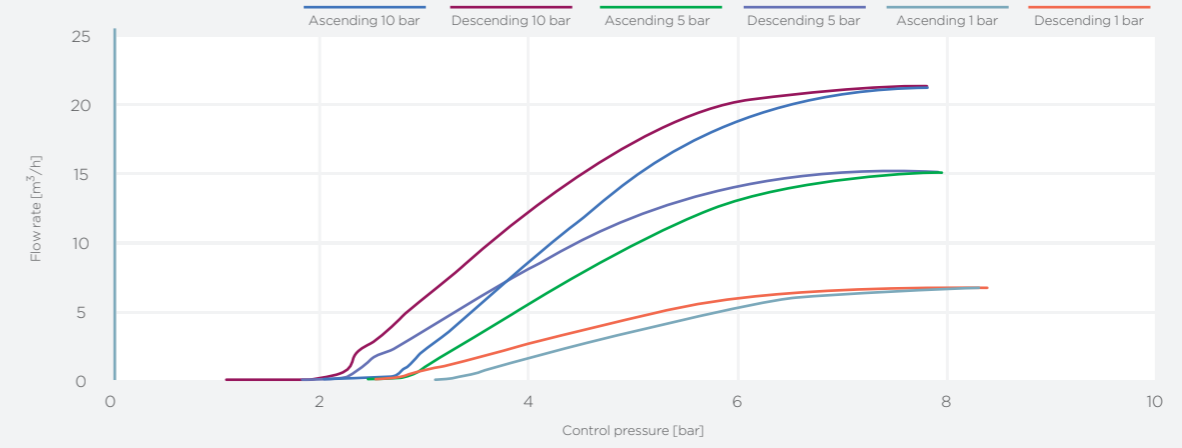
DN25 ACTUATOR 70 mm



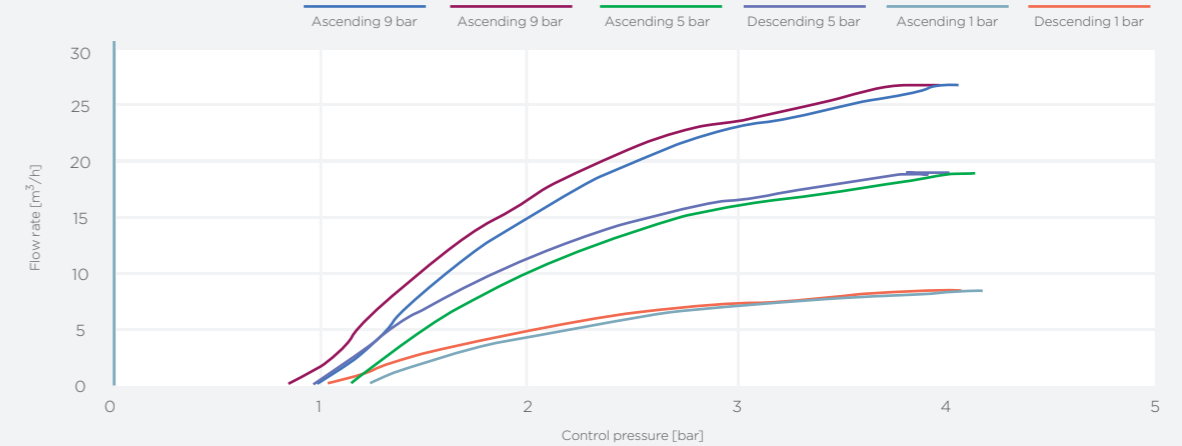
DN15 ACTUATOR 50 mm



DN20 ACTUATOR 50 mm



DN25 ACTUATOR 50 mm



I	II	III	VI	V	VI	VII	VIII	IX	-	X
2	1	IA	4	T	15	G	P	2	-	

I. NUMBER OF WAYS

2 - 2-way

II. NUMBER OF ELEMENTS

1 - 1 element

III. SERIES

IA

IV. PIPE

4 - 1/2"
5 - 3/4"
6 - 1"

V. SEALING MATERIAL

T - PTFE

VI. NOMINAL DIAMETER

15 - DN15
20 - DN20
25 - DN25

VII. THREAD TYPE

G - ISO 228/1

VIII. PILOT FUNCTION

P - Proportional

IX. PILOT THREAD SIZE

1 - G1/8
2 - G1/4

X. OPTIONS

5 - Stainless steel actuator

CODIFICATION

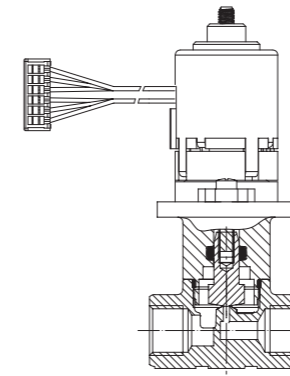
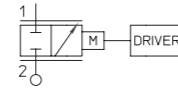
For the control of the Proportional flow valve is suggested using a 3/2 way proportional pressure regulator with input signal according to the controller and output signal 0-10 bar and flow capability 100 NI/min.

For the control of the Proportional flow valve is suggested using a 3/2 way proportional pressure regulator with input signal according to the controller and output signal 0-10 bar and flow capability 100 NI/min.

21JN1S SERIES

Motorized valves, 2-way

21JN1S are proportional valves driven by a bipolar stepper motor. Thanks to this type of technology it is possible to minimize the effects of hysteresis and to improve the response time and the repeatability of performance over time. Minimum operational pressure is not required. This motorized valve can be associated to a control driver that can be interfaced with PLC systems, 4-20 mA and 0-10 V. *Please see Driver in Chapter Control & Automation.*



Proportional technology ■ Motorized valves ■ 2-way ■ 21JN1S SERIES

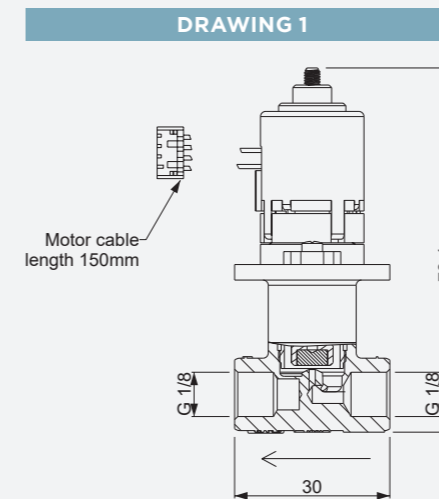
TECHNICAL DATA

PORT CONNECTION	G1/8
SEALING MATERIALS	FKM
MEDIUM TEMPERATURE	25°C
FLUIDS	water, air, inert gases
VISCOSITY	max. 12 cSt
INSTALLATION	with actuator upright
MOPD	12 bar
ORIFICE DIAMETER	1.2 mm
TRAVEL PER STEP	0,021 mm
AMBIENT TEMPERATURE	-40°C +85°C
POWER SUPPLY	24 V DC

MATERIALS

BODY	Brass on request, PPS, Stainless Steel AISI 300
ARMATURE TUBE	Stainless steel AISI 300
PLUNGER	Stainless steel AISI 300
SHUTTER	V=FKM, on request B=NBR
ORIFICE	Brass on request, PPS, Stainless Steel AISI 300

PIPE	ORIFICE SIZE	Kv	PRESSURE [bar]		CODE	DRAWING
			MIN	MOPD (DC)		
ISO 228/1 G1/8	Ø [mm] 1,2	[l/min] 1	0	12	21JNISV12-P3-M002	1

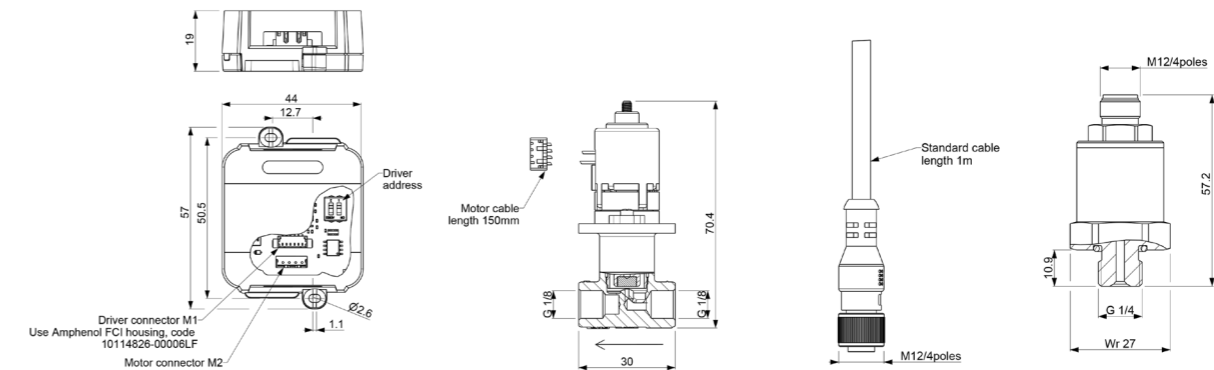
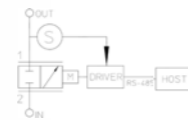


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DPS SYSTEM

Motorized Valves Systems

Dynamic Pressure System is a three-element system: stepper motor valve, driver and pressure transducer. Combined together these three elements give rise to a system that changes the brewing pressure in a few hundred of milliseconds and with a precision never seen before. DPS adjusts the brewing pressure in a dynamic way, depending on a specific target coming from the electronic control of the machine. The DPS system can easily be interfaced with the electronic of every machine.



Proportional technology ■ Motorized Valves System ■ **DPS SYSTEM**

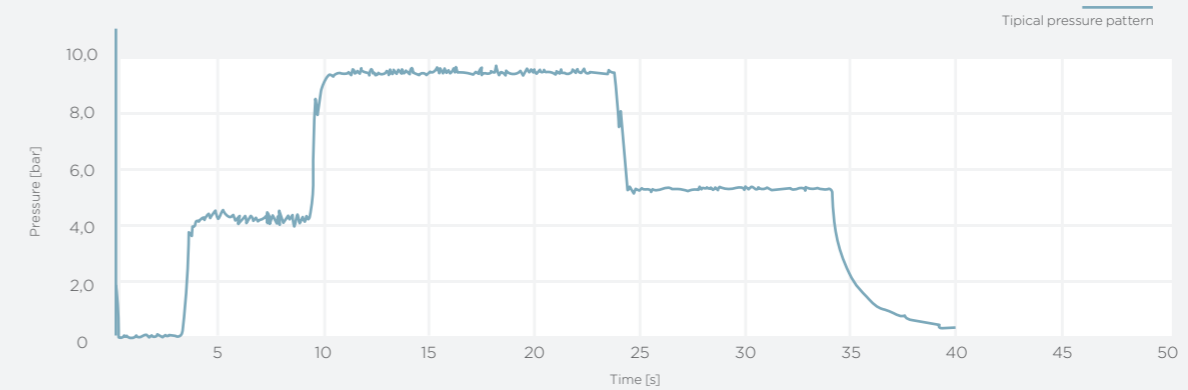
TECHNICAL DATA

VALVE	PORT CONNECTION	G1/8
	SEALING MATERIALS	FKM
	MEDIUM TEMPERATURE	25°C
	FLUIDS	Water, air, inert gases
	VISCOSITY	max. 12 cSt
	INSTALLATION	With actuator upright
	MOPD	12 bar
	ORIFICE DIAMETER	1,2 mm
	TRAVEL PER STEP	0,021 mm
	POWER SUPPLY	24V DC ±10%
DRIVER	SYSTEM - POWER RANGE	12 W max
	ELECTRICAL CONFORMITY	IEC/EN 61326-1
	AMBIENT TEMPERATURE	From -40°C to +85°C
	PROTECTION	Valve sensorless stall detection Full protected motor
	RESOLUTION STEP	Micro-step 1/4
	INPUT	2xAnalog 0-5 V
	COMMUNICATION BUS	Bus RS-485 slave integrated
	RESPONSE TIME	≤5 ms (typically)
	PORT CONNECTION	G1/4 On request: 1/4 NPT
	POWER SUPPLY	5 V DC
PRESSURE TRANSDUCER	OUTPUT RANGE	0,5-4,5 V Ratiometric
	PRESSURE RANGE	0-20 bar
	PS	40 bar
	BURST PRESSURE	60 bar

MATERIALS

VALVE	BODY	Brass on request: PPS, Stainless Steel AISI series 300
	ARMATURE TUBE	Stainless Steel AISI series 300
	PLUNGER	Stainless Steel AISI series 300
	SHUTTER	V=FKM On request: B=NBR
	ORIFICE	Brass On request: PPS, Stainless Steel AISI series 300
DRIVER	MATERIAL CASE	PPO
PRESSURE TRANSDUCER	BODY	STAINLESS STEEL AISI SERIES 300
	O-RING	V=FKM ON REQUEST: B=NBR
	CERAMIC SENSOR	AL ₂ O ₃ 96%

■ Please check the compatibility of the fluids in contact with the materials at RFQ stage.



Typical pressure pattern

I	II	III	IV	V	VI	VII	VIII	IX
DPS	12	JN1	V	12	R	24	T	0000

I. SYSTEM NAME
DPS
II. MOPD
12 bar
III. BODY VALVE
JN1

IV. SEAL MATERIAL
V=FKM
V. CORE TUBE TYPE
KC - for 2/2 proportional valves
VI. Ø ORIFICE
1,2 mm

VII. INTERFACE TYPE
with Master System
R=RS-485
VIII. DRIVER SUPPLY+
T= Transducer
IX. FUTURE CODES
-

CODIFICATION

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5 CONTROL
& AUTOMATION

+SMART ONE	239
+SMART CUBE	241
DISPLAY	245
+SMART COMPACT	247
+CLOUD	249
DRIVER	251



+SMART ONE

Your Gateway to Excellence

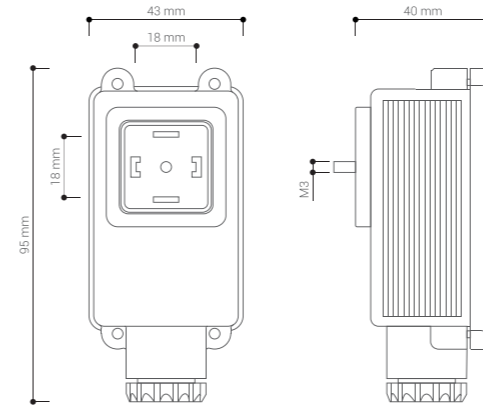


Control and Automation

+SMART is a system that allows the control, monitoring and management of machine parts or whole machines thanks to the integration of a PLC (CODESYS).

Main features:

- **n.3 digital I/O**, to manage auxiliary inputs coming from the field and activate devices or sequences of the machine,
- **n.4 analog inputs** to process any measuring device,
- **n.1 PWM output** to control the solenoid valve coil standard or proportional type.
- **an integrated Wi-Fi system** that allows to collect data through a cloud platform and provide remote support and predictive maintenance.

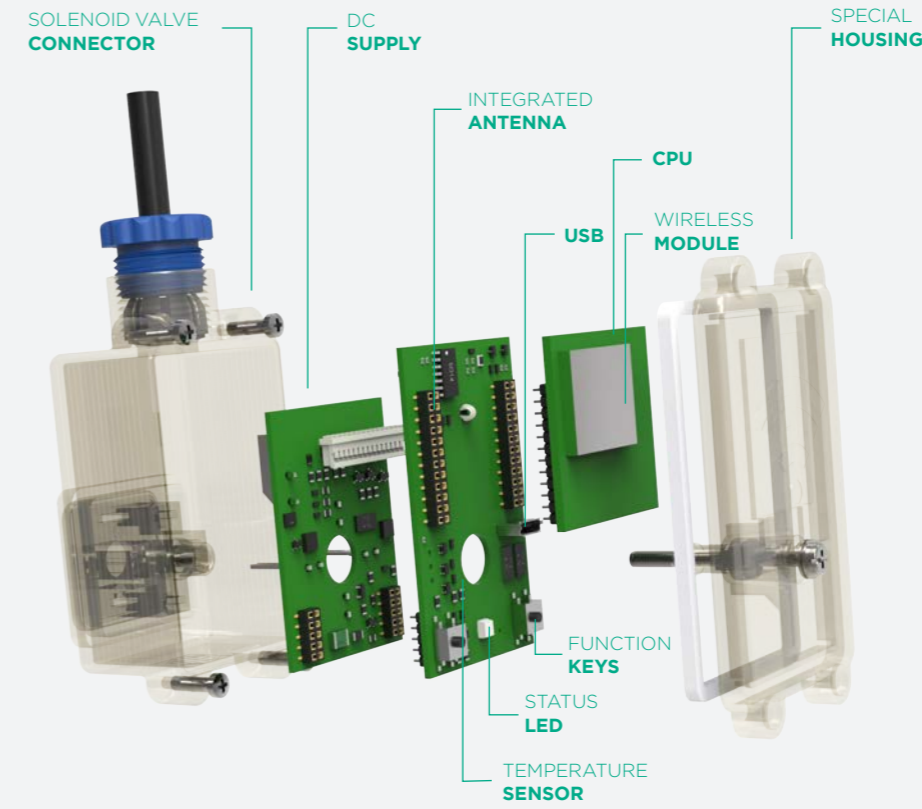
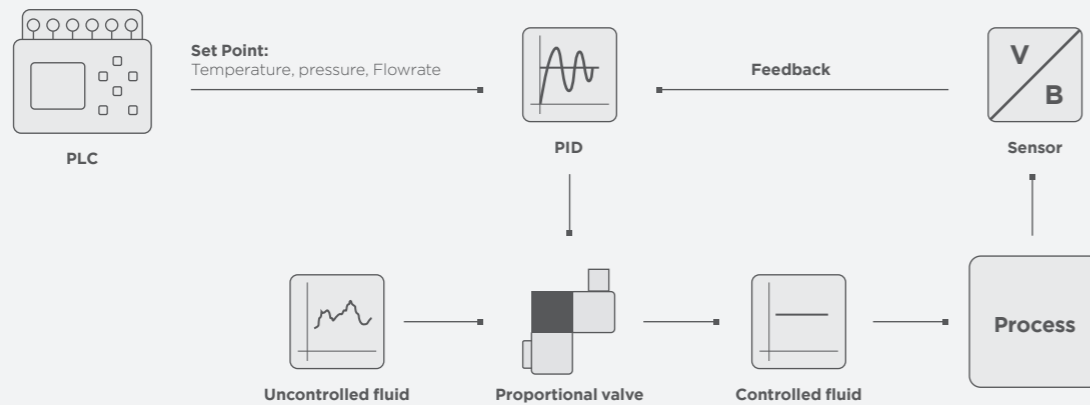


Control and Automation ■ +SMART One

TECHNICAL DATA

HARDWARE ARCHITECTURE	ARM® CORTEX™ - M4 PROCESSOR
WI-FI	IEEE 802.11 b/g/n -2.4 GHz SECURITY WPA/WPA2, ENCRYPTION WEP/TKIP/AESWEP, (UFL CONNNECTOR AVAILABLE)
VOLTAGE INPUT	24 VDC (+10% - 5%) (5A MAX)
DIGITAL OUTPUTS	n.3 OPEN COLLECTORS (MAX 3 A) n.1 PWM FOR COIL OPERATION
DIGITAL INPUTS	n.3 INPUTS (24 VDC)
ANALOG INPUTS	n.4 INPUTS (n.2 - 0..10VDC) / (n.2 - 4..20mA), 12bit
USB	N.1 USB 2.0
HOUSING	NYLON PA66
HOUSING GASKET	SILICON
PROTECTION CLASS	IP 67
CASE INSTALLATION	EN 175301-803 (EX DIN 43650/A), 2P+E, IP 67
CABLE	MULTIPOLAR - LENGTH 1m (PVC) OTHER LENGTH AND MATERIAL AVAILABLE
ENVIRONMENT	OPERATING: -10.. 50°C (14 ... 122°F) STORAGE: -25.. 70°C (13 ... 158°F)
APPROVALS	CE, EMC, RED
WEIGHT	APPROX. 80g (WITHOUT CABLE)

APPLICATION SCHEME

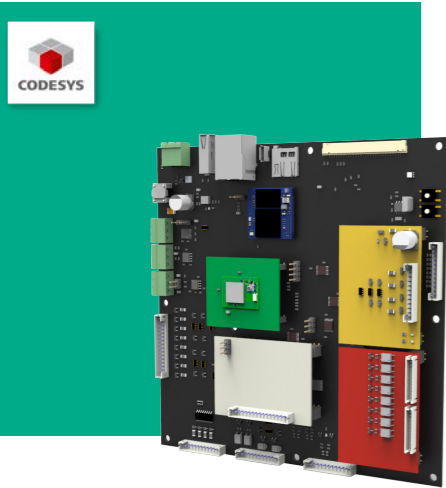


I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
PS	024	D	2	2	03	03	C	100	A	000	0
I. PLUS SMART	II. SUPPLY VOLTAGE 024 - 24V 230 - 230V	III. VOLTAGE TYPE D - DC A - AC	IV. NUMBER OF INPUTS 4-20MA 2 - 2	V. NUMBER OF INPUTS 0-10V 2 - 2	VI. NUMBER OF DIGITAL INPUTS 03 - 3 INPUT	VII. NUMBER OF DIGITAL OUTPUTS 03 - 3 OUTPUT	VIII. SW TYPE AND/OR LICENSE A - ONLY HW B - FIRMWARE C - RUN TIME CODESYS	IX. CONNECTION TYPE / CABLE LENGTH 100 - cable 100 cm 200 - cable 200 cm	X. ANTENNA A - internal B - external	XI. DIGITS FOR FUTURE ENCODINGS	XII. BRAND

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CODIFICATION

■ Please find us at our website www.plusmart.it



Control and Automation

CARRIER BOARD FOR INDUSTRIAL APPLICATIONS

The architecture of **+SMART Cube** allows to integrate the **different I/O modules** available on the main board, providing a solution that can reduce the overall dimensions and adapt to all needs.

The **scalable CPU** allows you to upgrade/downgrade performance and can be perfectly adapted to the respective application.

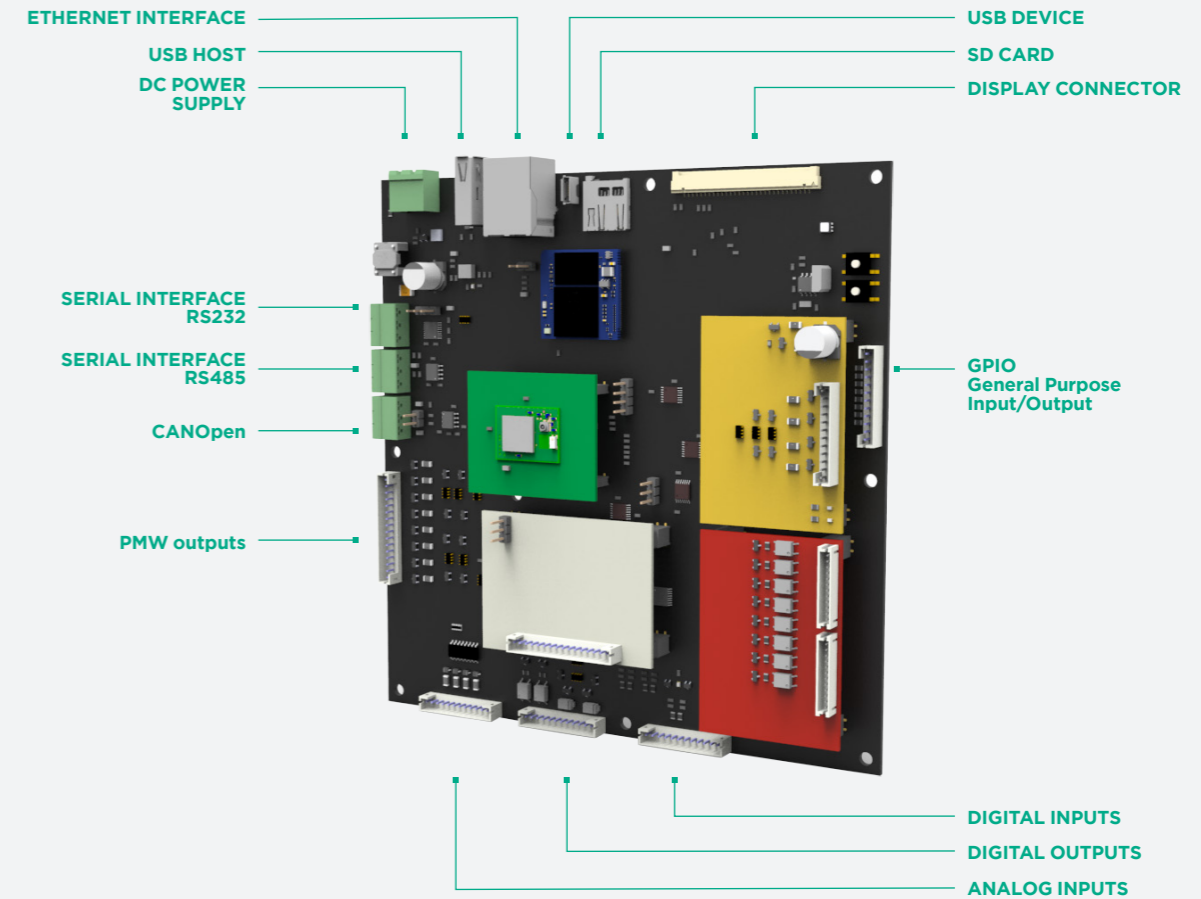


GENERAL FEATURES

- +modular architecture (up to 8 add-on modules)
- +high performance and scalable CPU
- +touch display with high resolution graphics
- +power PWM outputs for actuator control
- +multiple PID controls
- +digital I/O
- +analog I/O
- +programmable by customer (IEC 61131-3)
- +ethernet interface for communication protocols
- +CANOpen, I2C, RS232, RS485
- +high performance digital bus for communication with modules

CARRIER BOARD FEATURES

- +1 x 10/100 Ethernet interface
- +1 x microSD
- +1 x USB host (type A connector)
- +1 x USB device (type micro B connector)
- +1 x CANopen (Master mode - CIA 301)
- +1 x LCD connector from 7" to 10,1" for high resolution capacitive touchscreen
- +real time clock
- +24 VDC single power supply
- +8 x solenoid valve PWM drivers
- +8 x digital opto-isolated inputs (PNP)
- +4 x open collector digital outputs
- +4 x digital opto-isolated outputs
- +4 x 0-10V analog inputs
- +2 x 4-20mA analog inputs



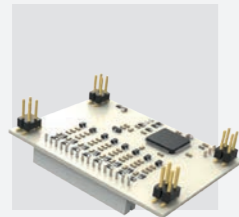
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OPTIONAL MODULES

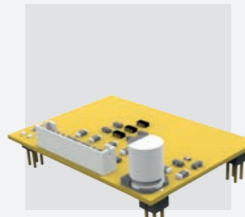
Additional option available (up to 8 modules) thanks to dedicated sockets.

- + n.8 x digital opto-isolated inputs and outputs
- + n.4 x solenoid valve PWM drivers (with power optimization and current control)
- + n.4 x 0-10 V DC, n. 4x4-20 mA analog inputs 12 bit

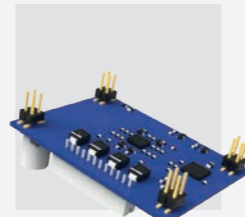
- + n.1 stepper motor driver
- + communication modules (Wi-Fi; 4G; NB-IoT; Bluetooth)



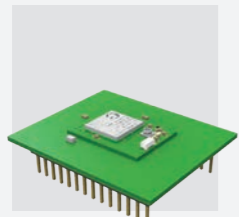
ANALOG I/O



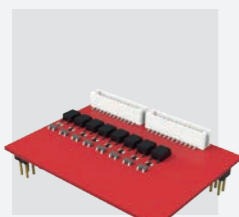
PWM POWER OUTPUTS



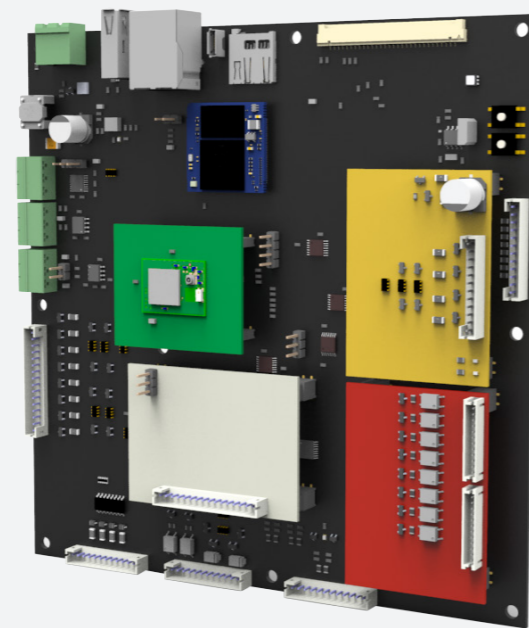
STEPPER MOTOR DRIVER



COMMUNICATION



DIGITAL I/O



I	II	III	IV	V	VI	VII	VIII	IX	X				
PC	A	0	A	N	S	O	A	0	0	C	0000	F	0
I. TYPE PC - +SMART CUBE II. SUPPLY VOLTAGE A - 24 V DC B - 12 V DC III. DISPLAY 0 - No display A - Display 7.0" B - Display 10.1" IV. EXPANSION MODULE SLOT 0 - Empty A - Analog Input V. COMMUNICATION MODULE 0 - None W - Wi-Fi + Bluetooth 4 - 4G N - NB-IoT VI. ADDITIONAL MEMORY 0 - None F - F-RAM VII. HOUSING C - No H - Yes* VIII. PROGRESSIVE NUMBER IX. SOFTWARE/LICENCE F - Firmware P - PLC T - PLC+TV W - PLC+WV Z - PLC+WV+TV X. BRAND													
I	II	III	IV	V	VI								
PC	A	04	04	0000000000	0								
I. TYPE PC - +SMART CUBE II. ADDITIONAL MODULE TYPE A - Analog Input		III. NUMBER OF 0-10 V INPUT IV. NUMBER OF 4-20 mA INPUT		V. PROGRESSIVE NUMBER VI. BRAND									
I	II	III	IV	V	VI								
PC	D	08	08	0000000000	0								
I. TYPE PC - +SMART CUBE II. ADDITIONAL MODULE TYPE D - Digital I/O		III. NUMBER OF DIGITAL INPUT IV. NUMBER OF DIGITAL OUTPUT		V. PROGRESSIVE NUMBER VI. BRAND									
I	II	III	IV	V	VI								
PC	S	00	04	0000000000	0								
I. TYPE PC - +SMART CUBE II. ADDITIONAL MODULE TYPE S - PWM SOV Driver		III. NUMBER OF INPUT IV. NUMBER OF PWM OUTPUT		V. PROGRESSIVE NUMBER VI. BRAND									
I	II	III	IV	V									
PC	C	W	00000000000000	0									
I. TYPE PC - +SMART CUBE II. ADDITIONAL MODULE TYPE C - Communication		III. COMMUNICATION MODULE W - Wi-Fi + Bluetooth 4 - 4G* N - NB-IoT*		IV. PROGRESSIVE NUMBER V. BRAND									

* Available on request.

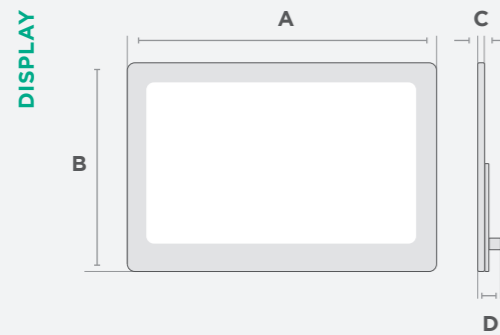
DISPLAY

Control and Automation

Display, capacitive touchscreen, 7" or 10.1", 16:9 aspect ratio, 1024x600 resolution.



Control and Automation ■ **+SMART Compact**



DISPLAY	A	B	C	D
7"	166,00	107,50	5,00	13,00
10.1"	262,00	181,00	7,00	15,00

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I	II	III	IV	V
PC	DS	07	000000000000	0
I. TYPE PC - +SMART CUBE	II. PRODUCT DS - CAPACITIVE TOUCHSCREEN DISPLAY	III. TYPE 07 - 07" without extended cover lens 10 - 10.1" with extended cover lens	IV. PROGRESSIVE NUMBER V. BRAND	CODIFICATION DISPLAY



Control and Automation

+SMART COMPACT is an extremely small and cost-effective embedded system.

Normally used for projects tailored to the customer's needs. Thanks to a powerful CPU, it can process signals coming from external devices and complete the tracking adding other information (such as pressure, flow, temperature and so on). All the information processed through this device can be sent by WiFi connectivity to a cloud platform such as: +CLOUD, Amazon AWS or Microsoft Azure. Other types of connectivity, such as CAN 2.0B and Bluetooth 4.2, allow local network connection.



GENERAL FEATURES

+CPU	dual-core 32 bit microprocessor, 240 MHz, up to 600 MIPS
+KEY FEATURES	RGB LED, analog input for sensor reading (12 bit), extreme low power suitable for IoT battery operated devices, very small dimensions
+CONNECTIVITY	Wi-Fi 802.11 n (2,4 GHz), up to 150 Mbps bluetooth v4.2 BR/EDR and BLE specifications I2C, CAN 2.0B, UART



I. TYPE
PSCT - +SMART COMPACT

II. PROGRESSIVE NUMBER
10 - 1.0

III. HARDWARE VERSION
10 - 1.0

IV. SOFTWARE VERSION
10 - 1.0

V. BRAND

CODIFICATION

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+ CLOUD

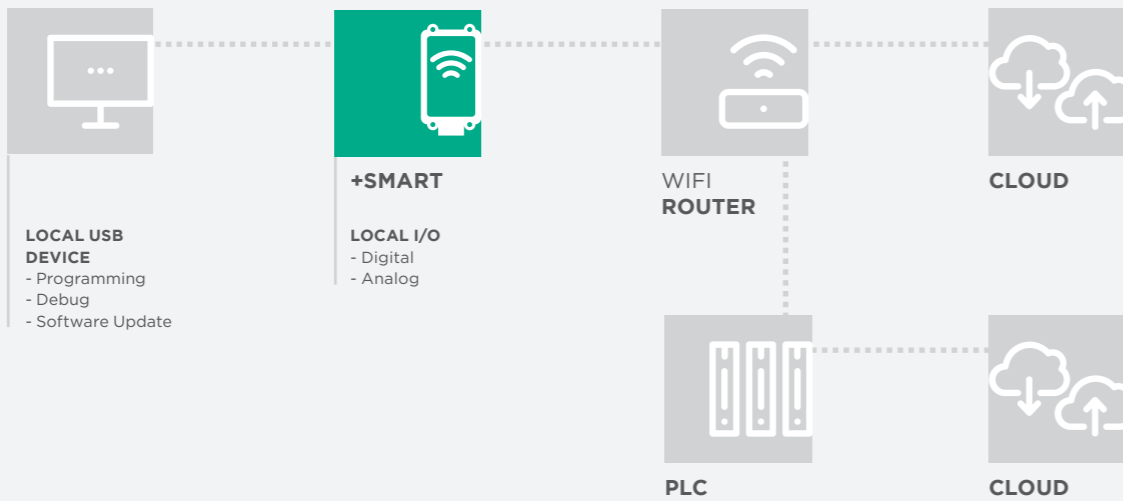
Control and Automation

IoT devices in the industrial world are a fundamental aspect of the optimization process of the production. The secure transferring of data is an ideal base for several standard applications or a simple way to solve applications not supported from traditional technology.

TECHNICAL DATA

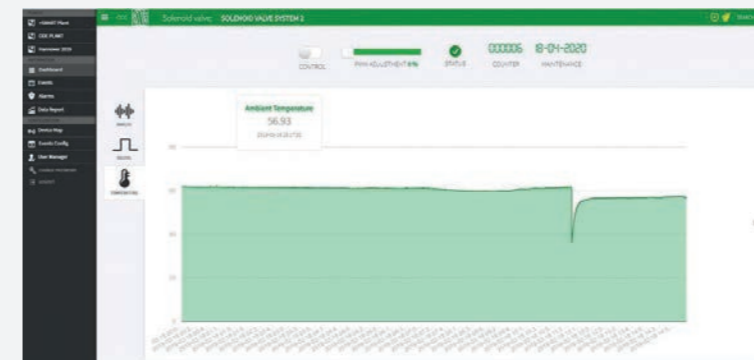
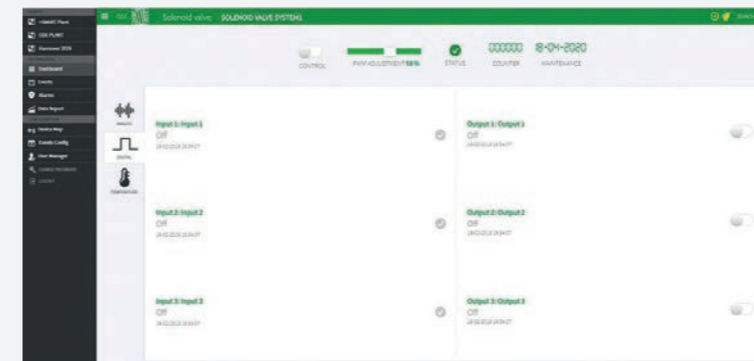
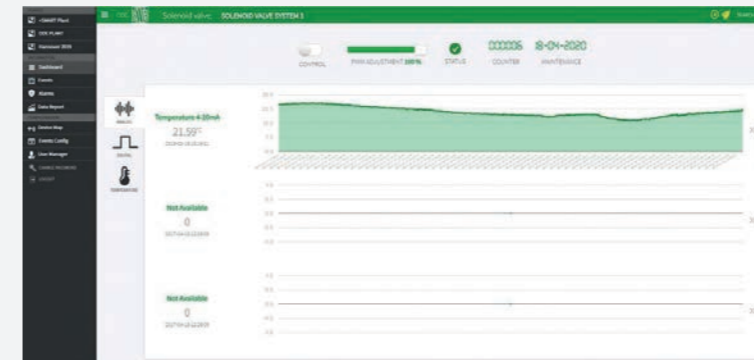
REAL TIME PROCESSING AND ARCHIVING	Data are processed in real time to create structured information and to generate events and alarms.
REMOTE ACCESS FROM PC OR SMARTPHONE / TABLET	It is possible to manage the remote application maintenance through any kind of devices.
PLATFORM MANAGEMENT	The platform allows to create custom views to check actual situations and historical data of modules.
NOTIFICATION OF EVENTS AND ALARMS	The platform is able to notify the user in several ways with events or alarms by e-mail, SMS or push notification.

CLOUD PLATFORM



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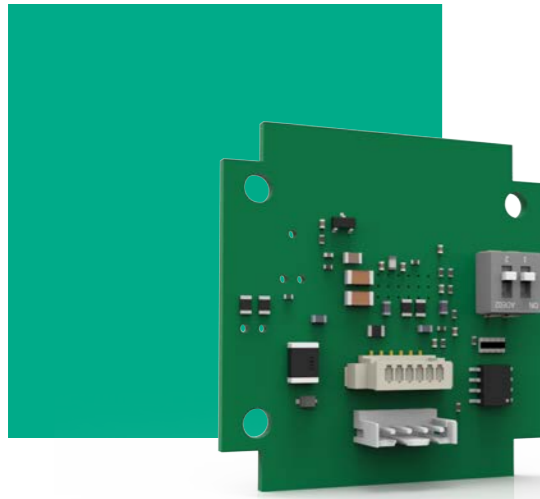
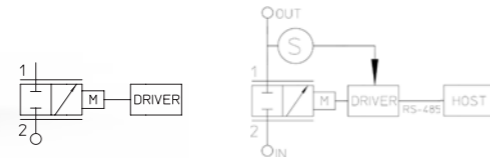
DASHBOARD OVERVIEW



DRIVER

Control and Automation

Electronic drivers can be programmed to control circuits in a closed loop, to regulate the flow respect a target, using a feedback that comes from a sensor (e.g. pressure, flow, temperature); or in an open loop, to regulate the flow proportional to a control signal, that originates from the host system.



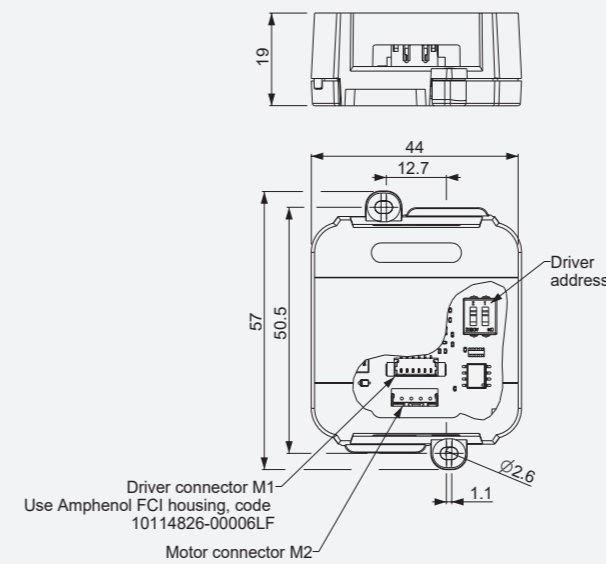
Control and Automation ■ **+DRIVER**

TECHNICAL DATA

POWER SUPPLY	24 V DC ± 10%
POWER RANGE	12 W max
ELECTRICAL CONFORMITY	IEC/EN 61326-1
AMBIENT TEMPERATURE	-40°C +85°C
PROTECTION	valve sensorless stall detection - full protected motor
STEP RESOLUTION	Micro-step 1/4
INPUT	2x analog 0-5 V*
RESPONSE TIMES	≤ 5 ms (typically)
BUS	RS-485 slave integrated

MATERIAL

MATERIAL CASE	PPO
---------------	-----

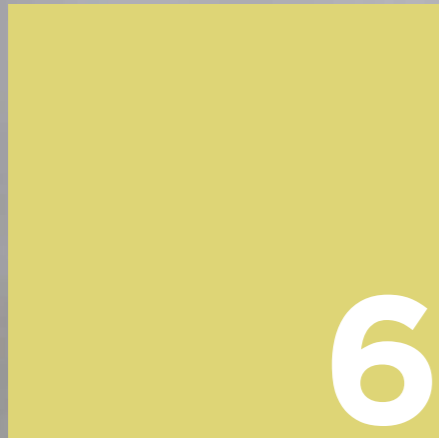
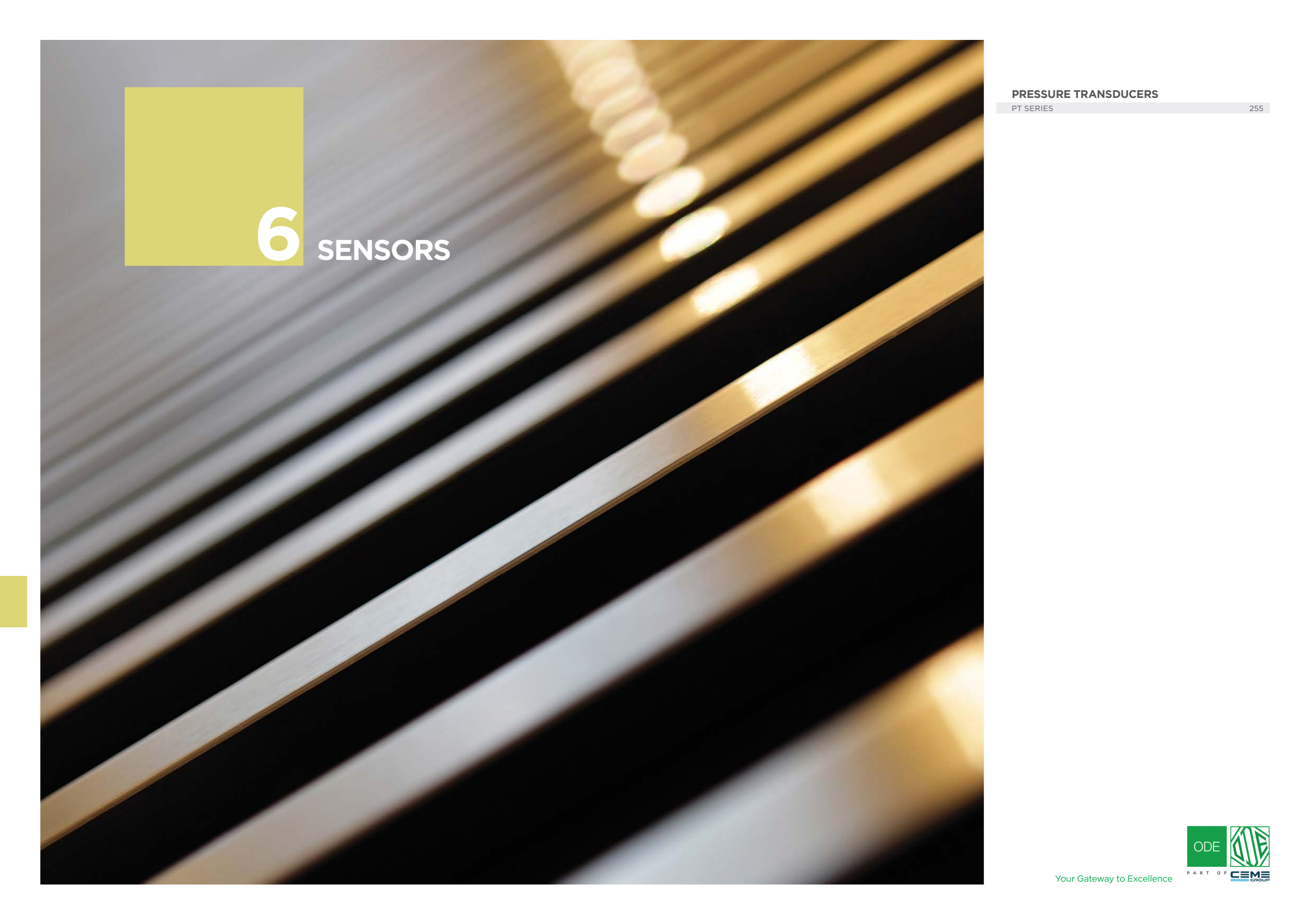


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I II III IV V VI VII VIII IX X XI XII
DRV - M 024 D C R 1 0 0 0 00 00

I. FAMILY COMPONENT	VII. N° OF ANALOG INPUTS 0-5V	XI. N° OF DIGITAL OUTPUTS*
II. DRIVER TYPE M - for stepper motor valve S - for solenoid valve	0 1 2 3	0 1 2 3
III. DRIVER SUPPLY VOLTAGE 012 - 12 V 024 - 24 V	VIII. N° OF ANALOG INPUTS 0-10V	XII. FIRMWARE VERSION 00 - FW standard 49 - FW standard 50 - FW custom 99 - FW custom
IV. VOLTAGE TYPE D - DC A - AC	0 1 2 3	
V. CONTROLLER TYPE O - Open loop C - closed loop	IX. N° OF ANALOG INPUTS 4-20 mA	
VI. INTERFACE TYPE WITH MASTER SYSTEM O - 4-20 mA 1 - 0-10 V 2 - 0-5V R - RS-485	0 1 2 3	
	X. N° OF DIGITAL INPUTS*	
	0 1 2 3	

CODIFICATION



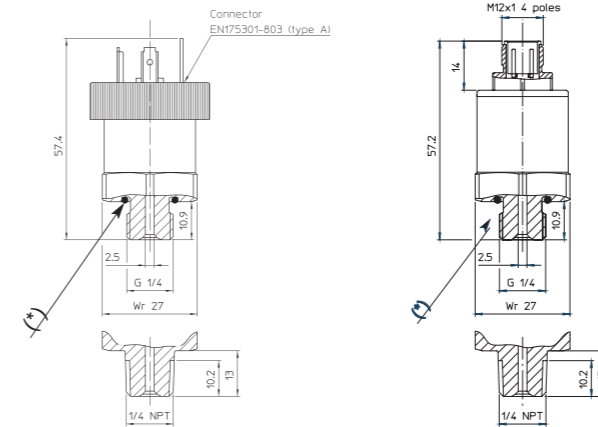
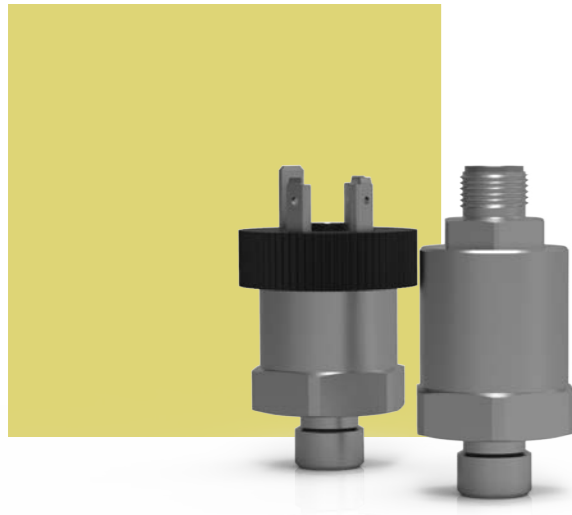
6 SENSORS



PT SERIES

Pressure transducers

Pressure transducers generate an electrical output signal proportional to the inlet pressure. The ceramic sensor detects the pressure of the most common fluids: air, water, gas, steam and aggressive media. When the temperature changes, the integrated digital electronic provides an offset and span correction and also an aging detection and compensation. This technology guarantees good precision and long term stability. Pressure transducers meet the requirements of Electromagnetic Compatibility EMI.



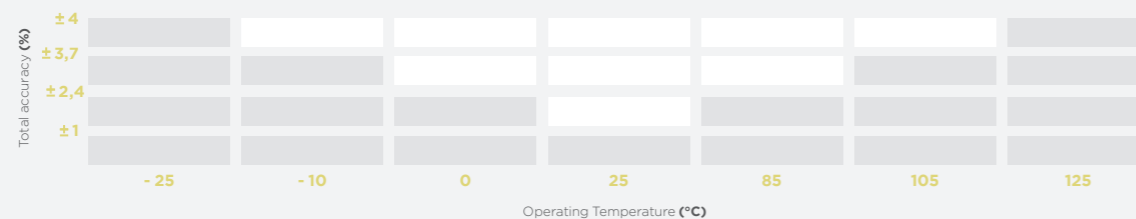
Sensors ■ Pressure transducers ■ PT SERIES

TECHNICAL DATA

PORT CONNECTION	G 1/4
SEALING MATERIALS	NBR FKM
FLUID TEMPERATURE	-10°C +90°C -10°C +140°C
FLUIDS	air, inert gases, water oils, gasoline, diesel
RESPONSE TIME	≤ 5 ms
PROTECTION DEGREE	IP65

MATERIALS

BODY	stainless steel AISI 316L
O-RING SEAL	Standard: V=FKM On request: B=NBR
SENSOR	Al ₂ O ₃ 96%



PIPE ISO 228/1	PRESSURE RANGE (bar)	OVERLOAD PRESSURE (bar) PS	BURST PRESSURE (bar)	SUPPLY VOLTAGE (V)	OUTPUT RANGE	CODE
G 1/4	0-1	2	3	12-35	0-10 V	PT001RG02V1Z00
G 1/4	0-2	4	8	9-35	4-20 mA	PT002RG02V0Z00
G 1/4	0-2	4	8	5	0,5-4,5 V	PT002RG02V2Z00
G 1/4	0-5	10	20	9-35	4-20 mA	PT005RG02V0Z00
G 1/4	0-10	20	35	9-35	4-20 mA	PT010RG02V0Z00
G 1/4	0-10	20	35	12-35	0-10 V	PT010RG02V1Z00
G 1/4	0-16	40	60	9-35	4-20 mA	PT016RG02V0Z00
G 1/4	0-20	40	60	9-35	4-20 mA	PT020RG02V0Z00
G 1/4	0-20	40	60	12-35	0-10 V	PT020RG02V1Z00
G 1/4	0-20	40	60	5	0,5-4,5 V	PT020RG02V2Z00
G 1/4	0-50	100	140	9-35	4-20 mA	PT050RG02V0Z00
G 1/4	0-50	100	140	12-35	0-10 V	PT050RG02V1Z00
G 1/4	0-100	100	300	9-35	4-20 mA	PT100RG02V0Z00
G 1/4	0-100	150	300	12-35	0-10 V	PT100RG02V1Z00
G 1/4	0-200	300	400	9-35	4-20 mA	PT200RG02V0Z00
G 1/4	0-400	500	650	9-35	4-20 mA	PT400RG02V0Z00



- I. SERIES PRESSURE TRANSDUCER**
- II. PRESSURE RANGE**
001 - 1 bar
002 - 2 bar
005 - 5 bar
010 - 10 bar
020 - 20 bar
050 - 50 bar
100 - 100 bar
200 - 200 bar
400 - 400 bar
- III. MEASURE TYPE**
A - ABSOLUTE
R - RELATIVE
- IV. PIPE INITIALS**
G - GAS
01 - 1/8
02 - 1/4
03 - 3/8
04 - 1/2
- V. SEALING MATERIALS**
B - NBR
V - FKM
- VI. OUTPUT**
0 - 4-20 mA
1 - 0-10 V
2 - Ratiometric 0,5-4,5 V
- VII. CONNECTION TYPE**
Z - Connector base EN 175301-803 (type A)
UL APPROVAL
O - UL Recognized
A - UL Listed with connector 1 m, straight*
B - UL Listed with connector 1 m, 90°*
C - UL Listed with connector 3 m, straight*
D - UL Listed with connector 3 m, 90°*
E - UL Listed with connector 5 m, straight*
F - UL Listed with connector 5 m, 90°*
- IX. DIGITS FOR SPECIAL PRESSURE SETUP**

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• The values indicated is approximate values, which may depend on the differences of medium and installation of the product.
• Calibration of number of pulse/litre is recommended for different installations.

• *A minimum order quantity is required for UL Listed versions. Please contact ODE for further information.

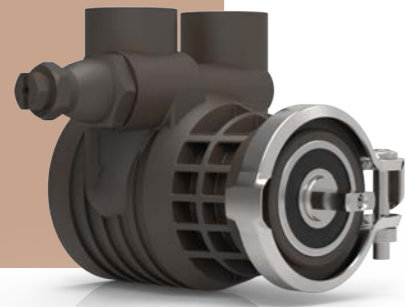


7 PUMPS

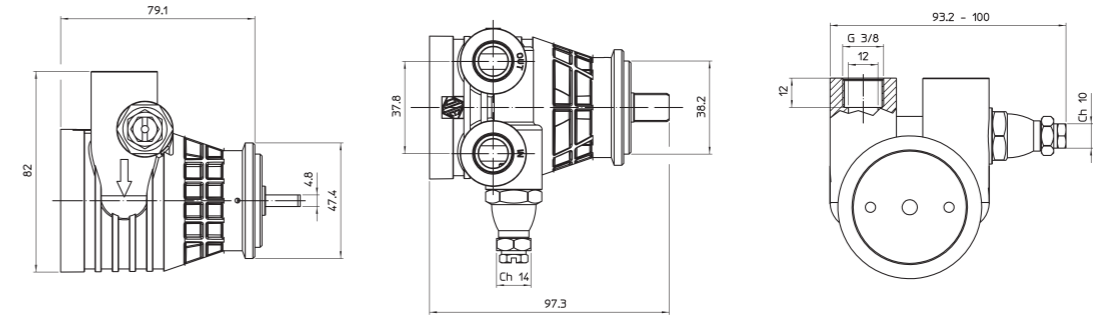
MOCAREEL

Rotary Vane Pumps

Rotary Vane Pump, made of technopolymer PPS, with stainless steel inserts and equipped with a bypass valve. The use of PPS guarantees food certification and compliance with the European Regulation no. 1935/2004 and the NSF169 standard.



Your Gateway to Excellence



Pumps ■ Rotary Vane Pumps ■ Mocarrel

TECHNICAL DATA

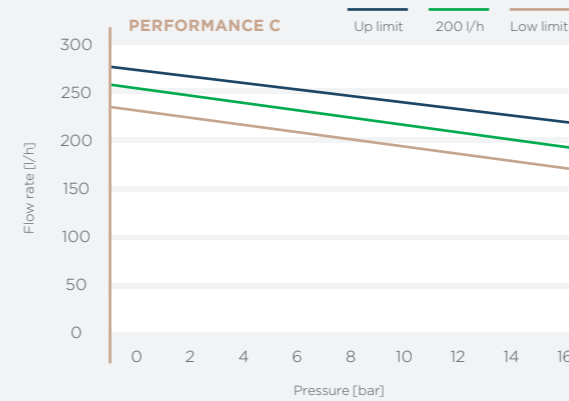
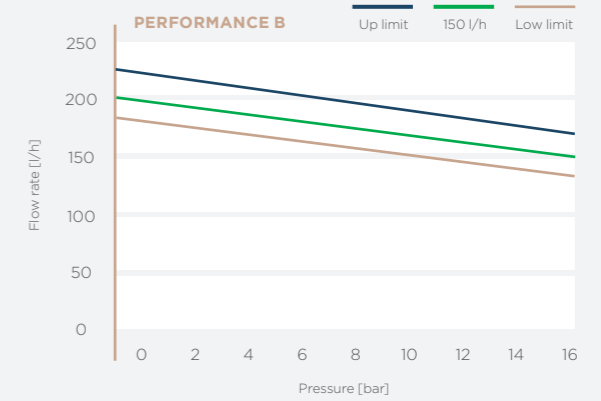
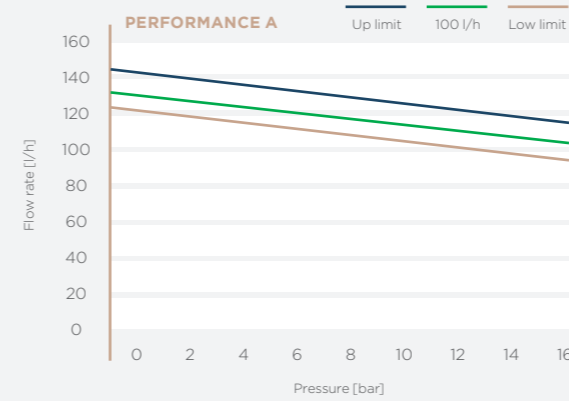
OUTLET	G3/8 - 3/8 NPT (on request)
FLUIDS	Water and food fluids
MAX AMBIENT TEMPERATURE	70°C
MAX FLUID TEMPERATURE	70°C
DEAD HEAD PRESSURE	See graph
FREE FLOW RATE	See graph
LIMIT SPEED ROTATION	1720 rpm
LIFE	5000 hours

MATERIALS

BODY	PPS
PUMPING CHAMBER	Graphite
ROTOR	Stainless Steel series 300
SPRING	Stainless Steel series 300
SEALS	EPDM/FKM
SEAL SHAFT SEAL	PTFE + Graphite/Ceramic

CODE	l/h [16 bar]	GRAPHIC	WEIGHT [g]
PR100PE3G0900-T0	100	A	510
PR150PE3G0900-T0	150	B	
PR200PE3G0900-T0	200	C	
PR300PE3G0900-T0	270	D	

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■ Elastomers EPDM | Standard or balanced bypass valve | Available on request and with minimum quantities.

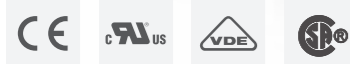
8 COILS

L SERIES	263
B SERIES	267
U SERIES	271
G SERIES	273
ATEX	
L Ex nA Series	275
B Ex nA Series	277
U Ex nA Series	279
G Ex nA Series	281
TNA Ex mb Series	283
B Series for Ex d Enclosure	285

L SERIES

Coils

L Series coils are 22 mm wide, suitable for armature tubes with diameter 10 mm. They can be provided in different temperature classes and materials.

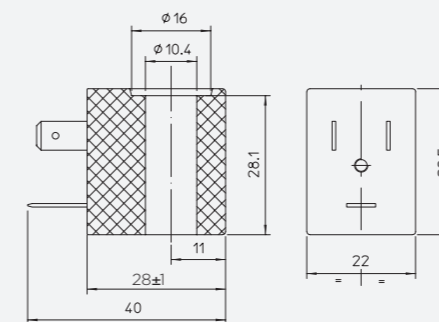


Coils ■ L SERIES

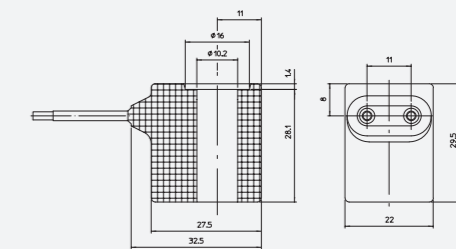
TECHNICAL DATA

ELECTRICAL CONNECTIONS	LBA, LBS, LBV SERIES	EN 175301-803 INDUSTRIAL FORM B (11 mm)
	LTA SERIES	FLYING LEADS, LENGTH 20 cm
PROTECTION DEGREE	LBA, LBS, LBV SERIES	IP 65 EN 60529 (DIN 40050) WITH CONNECTOR
	LTA SERIES	IP 00
WINDING INSULATION CLASS	CLASS H	
COIL INSULATION CLASS	LBA, LBS, LTA SERIES	CLASS F (155°C)
	LBV SERIES	CLASS H (180°C)
COIL ENCAPSULATION MATERIALS	LBA, LTA SERIES	BLACK PA (POLYAMIDE)
	LBS	IMPREGNATED BLACK PA (POLYAMIDE)
	LBV SERIES	BLACK PET (POLYETHYLENE)

DIN CONNECTIONS



FLYING LEADS



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DIN CONNECTIONS - CLASS F

CODE	VOLTAGE / FREQUENCY	POWER RATING	AMBIENT TEMPERATURE	DUTY CYCLE	APPROVALS
LOW POWER					
LBA2X012CS	12 V DC	2,5 W	-10°C +40°C	100%	CE
LBA2X024CS	24 V DC	2,5 W	-10°C +40°C	100%	CE
LBA2X024AS	24 V / 50 Hz	5 VA	-10°C +40°C	100%	CE
LBA2X110AS	110 V / 50 Hz	5 VA	-10°C +40°C	100%	CE
LBA2X230AS	230 V / 50 Hz	5 VA	-10°C +40°C	100%	CE
STANDARD POWER					
LBA05012CS	12 V DC	5 W	-10°C +40°C	100%	CE
LBA05012AS	12 V / 50 Hz	10 VA	-10°C +40°C	100%	CE
LBA05024CS	24 V DC	5 W	-10°C +40°C	100%	CE
LBA05024AS	24 V / 50Hz	10 VA	-10°C +40°C	100%	CE
LBA05110AS	110 V / 50 Hz 120 V / 60 Hz	10 VA	-10°C +40°C	100%	CE
LBA05220BS	220 V / 60 Hz	10 VA	-10°C +40°C	100%	CE
LBA05230AS	230 V / 50 Hz 240 V / 60 Hz	11,5 VA	-10°C +40°C	100%	CE
LBA05240AS	240 V / 50 Hz	10 VA	-10°C +40°C	100%	CE

- Tolerances on nominal voltages: AC + 10% - 15% DC + 10% - 5%
- Performances of the valve may vary with low power category coils. Please contact ODE before order.

DIN CONN. - CLASS F - IMPREG. ENCAPSULATION

CODE	VOLTAGE / FREQUENCY	POWER RATING	AMBIENT TEMPERATURE	DUTY CYCLE	APPROVALS
LOW POWER					
LBS2X024AS	12 V DC	2,5 W	-10°C +40°C	100%	CE
LBS2X230AS	24 V DC	2,5 W	-10°C +40°C	100%	CE
STANDARD POWER					
LBS05024AS	12 V DC	5 W	-10°C +40°C	100%	CE
LBS05024CS	24 V DC	7 W	-10°C +40°C	100%	CE
LBS05230AS	230 V / 50 Hz 240 V / 60 Hz	11,5 VA	-10°C +40°C	100%	CE

- Tolerances on nominal voltages: AC + 10% - 15% DC + 10% - 5%
- Performances of the valve may vary with low power category coils. Please contact ODE before order.

DIN CONNECTIONS - CLASS H

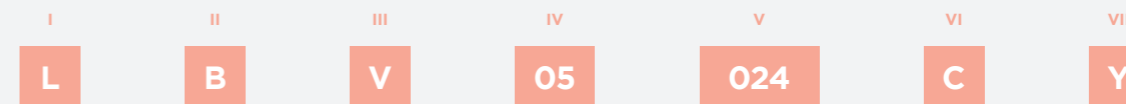
CODE	VOLTAGE / FREQUENCY	POWER RATING	AMBIENT TEMPERATURE	DUTY CYCLE	APPROVALS
REDUCED POWER					
LBV04230AY	230 V / 50 Hz 240 V / 60 Hz	9 VA	-20°C +60°C	100%	CE TÜV A B
STANDARD POWER					
LBV05006CY	6 V DC	7 W	-20°C +60°C	100%	CE TÜV A B
LBV05012CY	12 V DC	7 W	-20°C +60°C	100%	CE TÜV A B
LBV05024CY	24 V DC	7 W	-20°C +60°C	100%	CE TÜV A B
LBV05024DY	24 V / 50-60 Hz	11 VA	-20°C +60°C	100%	CE TÜV A B
LBV05048CY	48 V DC	7 W	-20°C +60°C	100%	CE TÜV A B
LBV05110AY	110 V / 50 Hz 120 V / 60 Hz	10 VA	-20°C +60°C	100%	CE TÜV A B
LBV05230AY	230 V / 50 Hz 240 V / 60 Hz	11,5 VA	-20°C +60°C	100%	CE TÜV A B
REDUCED DUTY CYCLE					
LBV08024HU	24 V DC	10 W	-20°C +40°C	50%	CE TÜV
LBV21012KW	12 V DC	21 W	-20°C +60°C	33%	CE TÜV
LO424024CS	24 V DC	24 W	-20°C +60°C	PWM 100 ms	CE

- Tolerances on nominal voltages: AC + 10% - 15% DC + 10% - 5%
- Cycle time considered for ED < 100% is 1 min.
- Performances of the valves may vary with low power or reduced duty cycle coils. Please contact ODE before order.

FLYING LEADS - CLASS F

CODE	VOLTAGE / FREQUENCY	POWER RATING	AMBIENT TEMPERATURE	DUTY CYCLE	APPROVALS
STANDARD POWER					
LTA05024AS	24 V / 50 Hz	10 VA	-10°C +40°C	100%	CE
LTA05230AS	230 V / 50 Hz	10 VA	-10°C +40°C	100%	CE

- Tolerances on nominal voltages: AC + 10% - 15% DC + 10% - 5%
- Coil without cable protection, connect the S.V. to a suitable earthing system.
- Available on request with minimum quantities.



- I. SERIES**
 - L - Width 22 - tube Ø 10
 - B - Width 30 - tube Ø 13
 - U - Width 36 - tube Ø 13
 - G - Width 52 - tube Ø 13
- II. ELECTRICAL CONNECTIONS**
 - B - connector EN 175301-803 industry standard form B
 - D - connector EN 175301-803 form A
 - V - 2 cables cm 50
 - T - 2 cables cm 20
- III. COIL HOUSING MATERIAL**
 - A - PA - Black polyamide - class F (155°C)
 - V - PET - Black Polyethylene - class H (180°C)
 - H - PPS - Black Polyphenylsulfide - class N (200°C)
- IV. POWER RATING**
 - 1X - 1,5 W
 - 2X - 2,5 W
 - 4X - 7,2 VA
 - 05 - 5 W - 7 W - 7,7 VA - 9,24 VA - 10 VA - 11,5 VA - 12,5 VA - 13,5 VA
 - 5X - 9,13VA
 - 08 - 8 W - 10 W - 11 W - 14,5 VA - 15 VA - 16 VA - 17 VA
 - 10 - 9,9 W - 10,1 W
 - 12 - 12 W - 22 VA - 23 VA - 25 VA
 - 14 - 14 W - 23 VA - 26 VA - 27 VA
 - 16 - 16 W
- V. VOLTAGE**
 - 004 - 4,5 V
 - 006 - 6 V
 - 009 - 9 V
 - 012 - 12 V
 - 024 - 24 V
 - 110 - 110 V / 50 Hz - 120 V / 60 Hz *
 - 112 - 110 -120 V
 - 220 - 220 V
 - 223 - 220-230 V
 - 224 - 220-240 V
 - 230 - 230 V / 50 Hz - 240 V / 60 Hz *
 - 240 - 240 V
 - 380 - 380 V
- VI. FREQUENCY**
 - A - 50 Hz ED 100% *
 - B - 60 Hz ED 100%
 - C - D.C. ED 100%
 - D - 50/60 Hz ED 100%
 - E - 50 Hz ED 50%
 - H - D.C. ED 50%
 - L - Latching coils
- VII. APPROVALS**
 - S - CE approval
 - U - CE, UL approval
 - Y - CE, UL, CSA, VDE approval

* Voltage code 110 A = 110 V / 50 Hz - 120 V / 60 Hz ED 100%
Voltage code 230 A = 230 V / 50 Hz - 240 V / 60 Hz ED 100%

CODIFICATION

B SERIES

Coils

B Series coils are 30 mm wide, suitable for armature tubes with diameter 13 mm. They can be provided with different electrical connections and temperature classes. The latching version is also available.

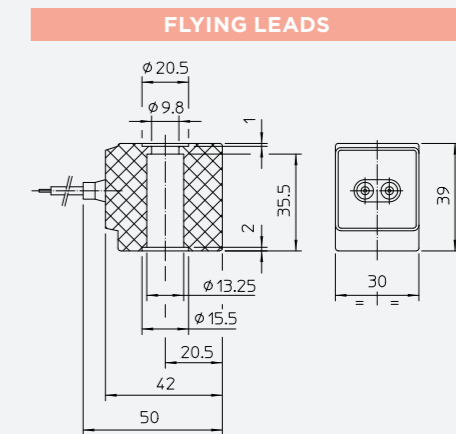
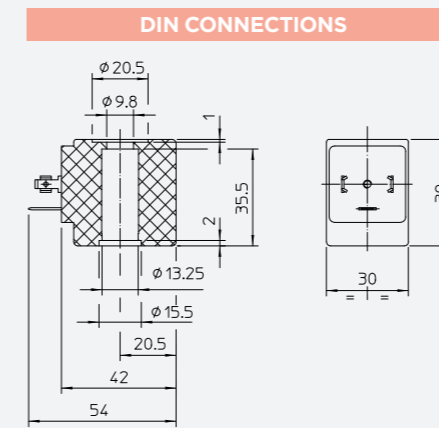


Coils ■ B SERIES

TECHNICAL DATA

ELECTRICAL CONNECTIONS	BDA, BDS, BDV SERIES	EN 175301-803 PARAGRAPH 5.3.1 (FORM A, 18 mm)
	BVA SERIES	FLYING LEADS, LENGTH 50 cm
PROTECTION DEGREE	BDA, BDS, BDV SERIES	IP 65 EN 60529 (DIN 40050) (WITH CONNECTOR)*
	BVA SERIES	IP 00
WINDING INSULATION CLASS	CLASS H	
COIL INSULATION CLASS	BDA, BDS, BVA SERIES	CLASS F (155°C)
	BDV SERIES	CLASS H (180°C)
COIL ENCAPSULATION MATERIALS	BDA, BVA SERIES	BLACK PA (POLYAMIDE)
	BDS SERIES	IMPREGNATED BLACK PA (POLYAMIDE)
	BDV SERIES	BLACK PET (POLYETHYLENE)

*For BDS and BDV coils IP 67 possible with anti-umidity kit R453382/B and suitable connector. Please refer to chapter 9.



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DIN CONNECTIONS CLASS F

CODE	VOLTAGE / FREQUENCY	POWER RATING	AMBIENT TEMPERATURE	DUTY CYCLE	APPROVALS
LOW POWER					
BDA2X024CS	24 V DC	2,5 W	-10°C +40°C	100%	CE
STANDARD POWER					
BDA08012CS	12 V DC	11 W	-10°C +40°C	100%	CE
BDA08012AS	12 V / 50 Hz	14,5 VA	-10°C +40°C	100%	CE
BDA08024CS	24 V DC	11 W	-10°C +40°C	100%	CE
BDA08024DS	24 V / 50-60 Hz	17 VA	-10°C +40°C	100%	CE
BDA08036CS	36 V DC	8 W	-10°C +40°C	100%	CE
BDA08042AS	42 V / 50 Hz	14,5 VA	-10°C +40°C	100%	CE
BDA08048CS	48 V DC	10 W	-10°C +40°C	100%	CE
BDA08048AS	48 V / 50 Hz	15 VA	-10°C +40°C	100%	CE
BDA08100DS	100 V / 50-60 Hz	14,5 VA	-10°C +40°C	100%	CE
BDA08110AS	110 V / 50 Hz	15 VA	-10°C +40°C	100%	CE
BDA08110DS	110 V / 50-60 Hz	14,5 VA	-10°C +40°C	100%	CE
BDA08190DS	190 V / 50-60 Hz	14,5 VA	-10°C +40°C	100%	CE
BDA08200DS	200 V / 50-60 Hz	14,5 VA	-10°C +40°C	100%	CE
BDA08220DS	220 V / 50-60 Hz	14,5 VA	-10°C +40°C	100%	CE
BDA08223DS	220-230 V / 50-60 Hz	14,5 VA	-10°C +40°C	100%	CE
BDA08230AS	230 V / 50 Hz	16 VA	-10°C +40°C	100%	CE
BDA08240AS	240 V / 50 Hz	14,5 VA	-10°C +40°C	100%	CE
BDA08380DS	380 V / 50-60 Hz	14,5 VA	-10°C +40°C	100%	CE
BDA08480BS	480 V / 60 Hz	14,5 VA	-10°C +40°C	100%	CE

- Tolerances on nominal voltages: AC + 10% - 15% DC + 10% - 5%
- Cycle time considered for ED < 100% is 1 min.
- Performances of the valves may vary when using low power or reduced duty cycle coils. Please contact ODE before order.

DIN CONN. - CLASS F - IMPREG. ENCAPSULATION

CODE	VOLTAGE / FREQUENCY	POWER RATING	AMBIENT TEMPERATURE	DUTY CYCLE	APPROVALS
BDS08012CS	12 V DC	11 W	-10°C +40°C	100%	CE
BDS08024CS	24 V DC	11 W	-10°C +40°C	100%	CE
BDS08024DS	24 V / 50-60 Hz	17 VA	-10°C +40°C	100%	CE
BDS08110DS	110 V / 50-60 Hz	14,5 VA	-10°C +40°C	100%	CE
BDS08223DS	220-230 V / 50-60 HZ	14,5 VA	-10°C +40°C	100%	CE
BDS08240AS	240 V / 50 Hz	14,5 VA	-10°C +40°C	100%	CE

- Tolerances on nominal voltages: AC + 10% - 15% DC + 10% - 5%

DIN CONNECTIONS CLASS H

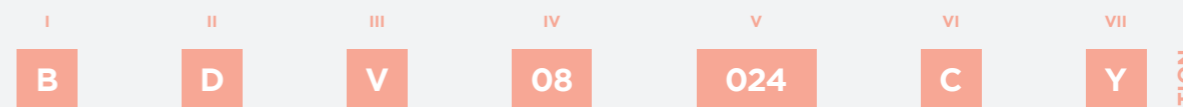
CODE	VOLTAGE / FREQUENCY	POWER RATING	AMBIENT TEMPERATURE	DUTY CYCLE	APPROVALS
BDV08012CY	12 V DC	11 W	-20°C +60°C	100%	CE
BDV08024CY	24 V DC	11 W	-20°C +60°C	100%	CE
BDV08024DY	24 V / 50-60 Hz	17 VA	-20°C +60°C	100%	CE
BDV08048CY	48 V DC	10 W	-20°C +60°C	100%	CE
BDV08048DY	48 V / 50-60 Hz	15 VA	-20°C +60°C	100%	CE
BDV08110AY	110 V / 50 Hz 120 V / 60 Hz	15 VA	-20°C +60°C	100%	CE
BDV08110CY	110 V DC	11 W	-20°C +60°C	100%	CE
BDV08230CY	230 V DC	10 W	-20°C +60°C	100%	CE
BDV08230AY	230 V / 50 Hz 240 V / 60 Hz	16 VA	-20°C +60°C	100%	CE
REDUCED DUTY CYCLE					
BDV23012KW	12 V DC	23 W	-20°C +60°C	33%	CE

- Tolerances on nominal voltages: AC + 10% - 15% DC + 10% - 5%
- Performances of the valves may vary when using low power or reduced duty cycle coils. Please contact ODE before order.

FLYING LEADS CONNECTIONS CLASS F

CODE	VOLTAGE / FREQUENCY	POWER RATING	AMBIENT TEMPERATURE	DUTY CYCLE	APPROVALS
BVA08024CS	24 V DC	8 W	-10°C +40°C	100%	CE
BVA08024AS	24 V / 50 Hz	17 VA	-10°C +40°C	100%	CE
BVA08223DS	220-230 V / 50-60 Hz	14,5 VA	-10°C +40°C	100%	CE

- Tolerances on nominal voltages: AC + 10% - 15% DC + 10% - 5%
- Coil without cable protection, connect the S.V. to a suitable earthing system.
- Available on request with minimum quantities.



I. SERIES

- L - Width 22 - tube Ø 10
- B - Width 30 - tube Ø 13
- U - Width 36 - tube Ø 13
- G - Width 52 - tube Ø 13

II. ELECTRICAL CONNECTIONS

- B - connector EN 175301-803 industry standard form B
- D - connector EN 175301-803 form A
- V - 2 cables cm 50
- T - 2 cables cm 20

III. COIL HOUSING MATERIAL

- A - PA - Black polyamide - class F (155°C)
- V - PET - Black Polyethylene - class H (180°C)
- H - PPS - Black Polyphenilsuphlide - class N (200°C)

IV. POWER RATING

- 1X - 1,5 W
- 2X - 2,5 W
- 4X - 7,2 VA
- 05 - 5 W - 7 W - 7,7 VA - 9,24 VA - 10 VA - 11,5 VA - 12,5 VA - 13,5 VA
- 5X - 9,13 VA
- 08 - 8 W - 10 W - 11 W - 14,5 VA - 15 VA - 16 VA - 17 VA
- 10 - 9,9 W - 10,1 W
- 12 - 12 W - 22 VA - 23 VA - 25 VA
- 14 - 14 W - 23 VA - 26 VA - 27 VA
- 16 - 16 W

V. VOLTAGE

- 004 - 4,5 V
- 006 - 6 V
- 009 - 9 V
- 012 - 12 V
- 024 - 24 V
- 110 - 110 V / 50 Hz - 120 V / 60 Hz *
- 112 - 110 - 120 V
- 220 - 220 V
- 223 - 220-230 V
- 224 - 220-240 V
- 230 - 230 V / 50 Hz - 240 V / 60 Hz *
- 240 - 240 V
- 380 - 380 V

VI. FREQUENCY

- A - 50 Hz ED 100% *
- B - 60 Hz ED 100%
- C - D.C. ED 100%
- D - 50/60 Hz ED 100%
- E - 50 Hz ED 50%
- H - D.C. ED 50%
- L - Latching coils

VII. APPROVALS

- S - CE approval
- Y - CE, UL, CSA, VDE approval

* Voltage code 110 A = 110 V / 50 Hz - 120 V / 60 Hz ED 100%
Voltage code 230 A = 230 V / 50 Hz - 240 V / 60 Hz ED 100%

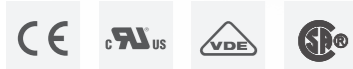
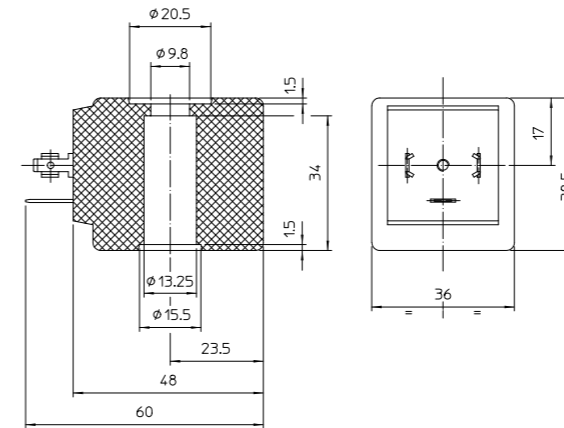
CODIFICATION

- The power values are indicative, as they change as a function of magnetic kit used.
- The power values are referred to holding phase for AC voltages and to cold values for DC voltages.
- The power values for AC voltages are referred to holding phase.
- Coil encapsulation and bobbin are made of 100% virgin material.
- Other voltages and power absorptions available on demand and for minimum order quantities. Please contact ODE for further information.

U SERIES

Coils

U Series coils are 36 mm wide, suitable for armature tubes with diameter 13 mm. All models are UL recognized.



Coils ■ U SERIES

TECHNICAL DATA

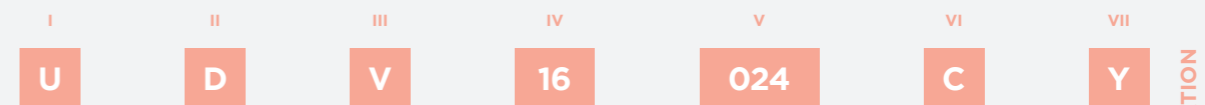
ELECTRICAL CONNECTIONS	EN 175301-803 paragraph 5.3.1 (form A, 18 mm)
PROTECTION DEGREE	IP 65 EN 60529 (DIN 40050) (with connector)*
WINDING INSULATION CLASS	class H
COIL INSULATION CLASS	class H (180°C)
COIL ENCAPSULATION MATERIALS	Black PET (polyethylene)

*IP 67 possible with anti-umidity kit R453382/U and suitable connector. Please refer to chapter 9.

DIN CONNECTIONS CLASS H

CODE	VOLTAGE / FREQUENCY	POWER RATING	AMBIENT TEMPERATURE	DUTY CYCLE	APPROVALS
REDUCED POWER					
UDV12012CY	12 V DC	13 W	-20°C +60°C	100%	CE UL VDE
UDV12024CY	24 V DC	13 W	-20°C +60°C	100%	CE UL VDE
UDV12024DY	24 V / 50-60 Hz	18 VA	-20°C +60°C	100%	CE UL VDE
UDV12110AY	110 V / 50 Hz 120 V / 60 Hz	17 VA	-20°C +60°C	100%	CE UL VDE
UDV12230AY	230 V / 50 Hz 240 V / 60 Hz	17 VA	-20°C +60°C	100%	CE UL VDE
STANDARD POWER					
UDV16024CY	24 V DC	16 W	-20°C +40°C	100%	CE UL VDE
UDV12112DW	110-120 V / 50-60 Hz	23 VA	-20°C +40°C	100%	CE UL
UDV12230DW	230 V / 50-60 Hz	25 VA	-20°C +40°C	100%	CE UL

■ Tolerances on nominal voltages: AC + 10% - 15% DC + 10% - 5%
 ■ Performances of the valves may vary when using reduced power coils. Please contact ODE before order.



I. SERIES

- L - Width 22 - tube Ø 10
- B - Width 30 - tube Ø 13
- U - Width 36 - tube Ø 13
- G - Width 52 - tube Ø 13

II. ELECTRICAL CONNECTIONS

- B - connector EN 175301-803 industry standard form B
- D - connector EN 175301-803 form A
- V - 2 cables cm 50
- T - 2 cables cm 20

III. COIL HOUSING MATERIAL

- A - PA - Black polyamide - class F (155°C)
- V - PET - Black Polyethylene - class H (180°C)
- H - PPS - Black Polyphenylsulfide - class N (200°C)

IV. POWER RATING

- 1X - 1.5 W
- 2X - 2.5 W
- 4X - 7.2 VA
- 05 - 5 W - 7 W - 7.7 VA - 9.24 VA - 10 VA - 11.5 VA - 12.5 VA - 13.5 VA
- 5X - 9.13 VA
- 08 - 8 W - 10 W - 11 W - 14.5 VA - 15 VA - 16 VA - 17 VA
- 10 - 9.9 W - 10.1 W
- 12 - 12 W - 22 VA - 23 VA - 25 VA
- 14 - 14 W - 23 VA - 26 VA - 27 VA
- 16 - 16 W

V. VOLTAGE

- 004 - 4.5 V
- 006 - 6 V
- 009 - 9 V
- 012 - 12 V
- 024 - 24 V
- 110 - 110 V / 50 Hz - 120 V / 60 Hz *
- 112 - 110-120 V
- 220 - 220 V
- 223 - 220-230 V
- 224 - 220-240 V
- 230 - 230 V / 50 Hz - 240 V / 60 Hz *
- 240 - 240 V
- 380 - 380 V

* Voltage code 110A = 110 V / 50 Hz - 120 V / 60 Hz ED 100%
 Voltage code 230A = 230 V / 50 Hz - 240 V / 60 Hz ED 100%

VI. FREQUENCY

- A - 50 Hz ED 100% *
- B - 60 Hz ED 100%
- C - D.C. ED 100%
- D - 50/60 Hz ED 100%
- E - 50 Hz ED 50%
- H - D.C. ED 50%
- L - Latching coils

VII. APPROVALS

- W - CE, UL approval
- Y - CE, UL, CSA, VDE approval

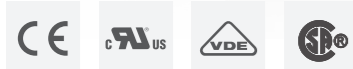
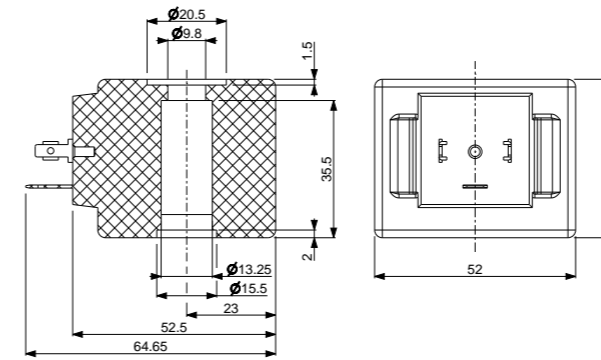
CODIFICATION

■ The power values are indicative, as they change as a function of magnetic kit used.
 ■ The power values are referred to holding phase for AC voltages and to cold values for DC voltages.
 ■ The power values for AC voltages are referred to holding phase.
 ■ Coil encapsulation and bobbin are made of 100% virgin material.
 ■ Other voltages and power absorptions available on demand and for minimum order quantities. Please contact ODE for further information.

G SERIES

Coils

G Series coils are 52mm wide, suitable for armature tubes with diameter 13mm. They can be provided in different temperature classes and materials.



Coils ■ G SERIES

TECHNICAL DATA

ELECTRICAL CONNECTIONS	EN 175301-803 paragraph 5.3.1 (form A, 18 mm)	
PROTECTION DEGREE	IP 65 EN 60529 (DIN 40050) (with connector)*	
WINDING INSULATION CLASS	CLASS N	
COIL INSULATION CLASS	GDH SERIES	CLASS N (200°C)
	GDV SERIES	CLASS H (180°C)
COIL ENCAPSULATION MATERIALS	GDH SERIES	BLACK PPS (POLYPHENYLENE SULFIDE)
	GDV SERIES	BLACK PET (POLYETHYLENE)

*IP 67 possible with anti-umidity kit R453382/G and suitable connector. Please refer to chapter 9.

DIN CONNECTIONS CLASS N

CODE	VOLTAGE / FREQUENCY	POWER RATING	AMBIENT TEMPERATURE	DUTY CYCLE	APPROVALS
GDH14012CS	12 V DC	23 W	-20°C +40°C	100%	CE
GDH14024CS	24 V DC	24 W	-20°C +40°C	100%	CE
GDH14220CS	220 V DC	14 W	-20°C +40°C	100%	CE

Tolerances on nominal voltages: AC + 10% - 15% DC + 10% - 5%.

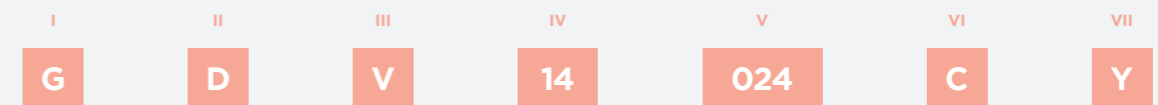
DIN CONNECTIONS CLASS H

CODE	VOLTAGE / FREQUENCY	POWER RATING	AMBIENT TEMPERATURE	DUTY CYCLE	APPROVALS
GDV14024CY	24 V DC	14 W	-20°C +60°C	100%	CE, UL, CSA, VDE
GDV14024DY	24 V / 50-60 Hz	27 VA	-20°C +60°C	100%	CE, UL, CSA, VDE
GDV14048DS	48 V / 50-60 Hz	26 VA	-20°C +40°C	100%	CE
GDV14230AY	230 V / 50 Hz 240 V / 60 Hz	31 VA	-20°C +60°C	100%	CE, UL, CSA, VDE

Tolerances on nominal voltages: AC + 10% - 15% DC + 10% - 5%.

SPECIAL VOLTAGES

CODE	VOLTAGE / FREQUENCY	POWER RATING	AMBIENT TEMPERATURE	DUTY CYCLE	APPROVALS
GDH14018CS	18-32 V DC	7-23 W	-20°C +70°C	100%	CE
GDH14077CS	77-138 V DC	7-23 W	-20°C +70°C	100%	CE



CODIFICATION

I. SERIES

- L - Width 22 - tube Ø 10
- B - Width 30 - tube Ø 13
- U - Width 36 - tube Ø 13
- G - Width 52 - tube Ø 13

II. ELECTRICAL CONNECTIONS

- B - connector EN 175301-803 industry standard form B
- D - connector EN 175301-803 form A
- V - 2 cables cm 50
- T - 2 cables cm 20

III. COIL HOUSING MATERIAL

- A - PA - Black polyamide - class F (155 °C)
- V - PET - Black Polyethylene - class H (180 °C)
- H - PPS - Black Polyphenylsulfide - class N (200 °C)

IV. POWER RATING

- 1X - 1.5 W
- 2X - 2.5 W
- 4X - 7.2 VA
- 05 - 5 W - 7 W - 7.7 VA - 9.24 VA - 10 VA - 11.5 VA - 12.5 VA - 13.5 VA
- 5X - 9.13 VA
- 08 - 8 W - 10 W - 11 W - 14.5 VA - 15 VA - 16 VA - 17 VA
- 10 - 9.9 W - 10.1 W
- 12 - 12 W - 22 VA - 23 VA - 25 VA
- 14 - 14 W - 23 VA - 26 VA - 27 VA
- 16 - 16 W

V. VOLTAGE

- 004 - 4.5 V
- 006 - 6 V
- 009 - 9 V
- 012 - 12 V
- 024 - 24 V
- 110 - 110 V / 50 Hz - 120 V / 60 Hz *
- 112 - 110 - 120 V
- 220 - 220V
- 223 - 220-230 V
- 224 - 220-240 V
- 230 - 230 V / 50 Hz - 240 V / 60 Hz *
- 240 - 240V
- 380 - 380V

* Voltage code 110A = 110 V / 50 Hz - 120 V / 60 Hz ED 100%
Voltage code 230A = 230 V / 50 Hz - 240 V / 60 Hz ED 100%

VI. FREQUENCY

- A - 50 Hz ED 100% *
- B - 60 Hz ED 100%
- C - D.C. ED 100%
- D - 50/60 Hz ED 100%
- E - 50 Hz ED 50%
- H - D.C. ED 50%
- L - Latching coils

VII. APPROVALS

- S - CE approval
- Y - CE, UL, CSA, VDE approval

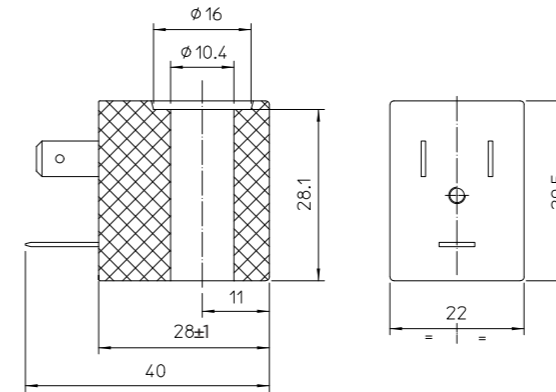
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The power values are indicative, as they change as a function of magnetic kit used.
The power values are referred to holding phase for AC voltages and to cold values for DC voltages.
The power values for AC voltages are referred to holding phase.
Coil encapsulation and bobbin are made of 100% virgin material.
Other voltages and power absorptions available on demand and for minimum order quantities. Please contact ODE for further information.

L Ex nA SERIES

Coils, Atex

L Series coils are 22 mm wide, suitable for armature tubes with diameter 10 mm.



Coils ■ Atex ■ L EX NA SERIES

TECHNICAL DATA

ELECTRICAL CONNECTIONS	EN 175301-803 industrial form B (11 mm)
PROTECTION DEGREE	IP 65 EN 60529 (DIN 40050) (with connector)
WINDING INSULATION CLASS	class H
COIL INSULATION CLASS	class H (180°C)
COIL ENCAPSULATION MATERIALS	Black PET (polyethylene)

DIN CONNECTIONS CLASS H

CODE	VOLTAGE / FREQUENCY	POWER RATING	AMBIENT TEMPERATURE	DUTY CYCLE
REDUCED POWER				
LBV04230A3	230 V / 50 Hz 240 V / 60 Hz	8 VA	-40°C +60°C	100%
STANDARD POWER				
LBV05006C3	6 V DC	9 W	-40°C +60°C	100%
LBV05012C3	12 V DC	7 W	-40°C +60°C	100%
LBV05024C3	24 V DC	7 W	-40°C +60°C	100%
LBV05024D3	24 V / 50-60 Hz	11 VA	-40°C +60°C	100%
LBV05048C3	48 V DC	8 W	-40°C +60°C	100%
LBV05110A3	110 V / 50 Hz 120 V / 60 Hz	10 VA	-40°C +60°C	100%
LBV05230A3	230 V / 50 Hz 240 V / 60 Hz	11,5 VA	-40°C +60°C	100%

- Tolerances on nominal voltages: AC + 10% - 15% DC + 10% - 5%.
- Performances of the valves may vary when using reduced power coils. Please contact ODE before order.



According to Directive 2014/34/EU ATEX
 II 3G Ex nA IIC T3 Gc
 II 3D Ex tc IIIC T200°C Dc IP 65



- I. SERIES**
L - Width 22 - tube \varnothing 10
B - Width 30 - tube \varnothing 13
U - Width 36 - tube \varnothing 13
G - Width 52 - tube \varnothing 13
- II. ELECTRICAL CONNECTIONS**
B - connector EN 175301-803 industry standard form B
D - connector EN 175301-803 form A
V - 2 cables cm 50
T - 2 cables cm 20
- III. COIL HOUSING MATERIAL**
A - PA - Black polyamide - class F (155°C)
V - PET - Black Polyethylene - class H (180°C)
H - PPS - Black Polyphenylsulfide - class N (200°C)
- IV. POWER RATING**
1X - 1.5 W
2X - 2.5 W
4X - 7,2 VA
05 - 5 W - 7 W - 7,7 VA - 9,24 VA - 10 VA - 11,5 VA - 12,5 VA - 13,5 VA
5X - 9,13 VA
08 - 8 W - 10 W - 11 W - 14,5 VA - 15 VA - 16 VA - 17 VA
10 - 9,9 W - 10,1 W
12 - 12 W - 22 VA - 23 VA - 25 VA
14 - 14 W - 23 VA - 26 VA - 27 VA
16 - 16 W
- V. VOLTAGE**
004 - 4,5 V
006 - 6 V
009 - 9 V
012 - 12 V
024 - 24 V
110 - 110 V / 50 Hz - 120 V / 60 Hz *
112 - 110 - 120 V
220 - 220 V
223 - 220-230 V
224 - 220-240 V
230 - 230 V / 50 Hz - 240 V / 60 Hz *
240 - 240 V
380 - 380 V
- VI. FREQUENCY**
A - 50 Hz ED 100% *
B - 60 Hz ED 100%
C - D.C. ED 100%
D - 50/60 Hz ED 100%
E - 50 Hz ED 50%
H - D.C. ED 50%
L - Latching coils
- VII. APPROVALS**
3 - ATEX approval

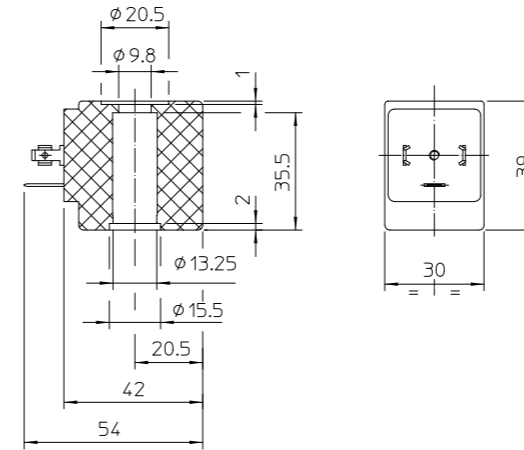
* Voltage code 110 A = 110 V / 50 Hz - 120 V / 60 Hz ED 100%
 Voltage code 230 A = 230 V / 50 Hz - 240 V / 60 Hz ED 100%

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B Ex nA SERIES

Coils, Atex

B Series coils are 30 mm wide, suitable for armature tubes with diameter 13 mm.



Coils ■ Atex ■ B EX NA SERIES

TECHNICAL DATA

ELECTRICAL CONNECTIONS	EN 175301-803 paragraph 5.3.1 (form A, 18 mm)
PROTECTION DEGREE	IP 65 EN 60529 (DIN 40050) (with connector)
WINDING INSULATION CLASS	class H
COIL INSULATION CLASS	class H (180°C)
COIL ENCAPSULATION MATERIALS	Black PET (polyethylene)

DIN CONNECTIONS CLASS H

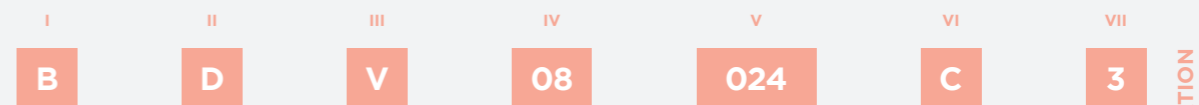
CODE	VOLTAGE / FREQUENCY	POWER RATING	AMBIENT TEMPERATURE	DUTY CYCLE
BDV08012C3	12 V DC	11 W	-40°C +65°C	100%
BDV08024C3	24 V DC	11 W	-40°C +65°C	100%
BDV08024D3	24 V / 50-60 Hz	17 VA	-40°C +70°C	100%
BDV08048C3	48 V DC	10 W	-40°C +65°C	100%
BDV08048D3	48 V / 50-60 Hz	15 VA	-40°C +70°C	100%
BDV08110A3	110 V / 50 Hz 120 V / 60 Hz	15 VA	-40°C +70°C	100%
BDV08110C3	110 V DC	11 W	-40°C +65°C	100%
BDV08230C3	230 V DC	10 W	-40°C +65°C	100%
BDV08230A3	230 V / 50 Hz 240 V / 60 Hz	16 VA	-40°C +70°C	100%

■ Tolerances on nominal voltages: AC + 10% - 15% DC + 10% - 5%.



According to Directive 2014/34/EU ATEX

II 3G Ex nA IIC T3 Gc
II 3D Ex tc IIIC T200°C Dc IP 65



I. SERIES

- L - Width 22 - tube Ø 10
- B - Width 30 - tube Ø 13
- U - Width 36 - tube Ø 13
- G - Width 52 - tube Ø 13

II. ELECTRICAL CONNECTIONS

- B - connector EN 175301-803 industry standard form B
- D - connector EN 175301-803 form A
- V - 2 cables cm 50
- T - 2 cables cm 20

III. COIL HOUSING MATERIAL

- A - PA - Black polyamide - class F (155°C)
- V - PET - Black Polyethylene - class H (180°C)
- H - PPS - Black Polyphenylsulfide - class N (200°C)

IV. POWER RATING

- 1X - 1.5 W
- 2X - 2.5 W
- 4X - 7.2 VA
- 05 - 5 W - 7 W - 7.7 VA - 9.24 VA - 10 VA - 11.5 VA - 12.5 VA - 13.5 VA
- 5X - 9.13 VA
- 08 - 8 W - 10 W - 11 W - 14.5 VA - 15 VA - 16 VA - 17 VA
- 10 - 9.9 W - 10.1 W
- 12 - 12 W - 22 VA - 23 VA - 25 VA
- 14 - 14 W - 23 VA - 26 VA - 27 VA
- 16 - 16 W

V. VOLTAGE

- 004 - 4.5 V
- 006 - 6 V
- 009 - 9 V
- 012 - 12 V
- 024 - 24 V
- 110 - 110 V / 50 Hz - 120 V / 60 Hz *
- 112 - 110 - 120 V
- 220 - 220 V
- 223 - 220-230 V
- 224 - 220-240 V
- 230 - 230 V / 50 Hz - 240 V / 60 Hz *
- 240 - 240 V
- 380 - 380 V

VI. FREQUENCY

- A - 50 Hz ED 100% *
- B - 60 Hz ED 100%
- C - D.C. ED 100%
- D - 50/60 Hz ED 100%
- E - 50 Hz ED 50%
- H - D.C. ED 50%
- L - Latching coils

VII. APPROVALS

- 3 - ATEX approval

* Voltage code 110 A = 110 V / 50 Hz - 120 V / 60 Hz ED 100%
Voltage code 230 A = 230 V / 50 Hz - 240 V / 60 Hz ED 100%

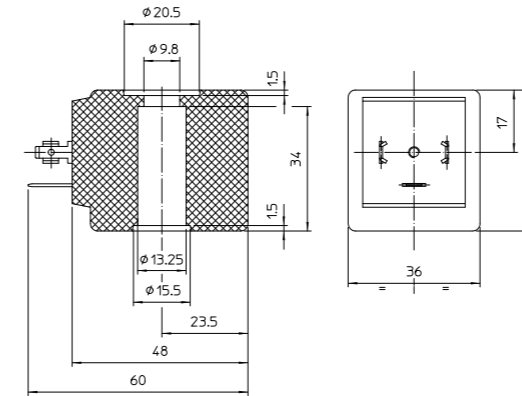
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- The coils must be used only with ATEX type Ex II 3GD IP65 connector, ODE code P992221.
- The connector must be ordered separately.
- The power values are referred to holding phase for AC voltages and to cold values for DC voltages.
- Coil encapsulation and bobbin are made of 100% virgin material.
- Other voltages and power absorptions available on demand and for minimum order quantities. Please contact ODE for further information.

U Ex nA SERIES

Coils, Atex

U Series coils are 36 mm wide, suitable for armature tubes with diameter 13mm.



Coils ■ Atex ■ U EX NA SERIES

TECHNICAL DATA

ELECTRICAL CONNECTIONS	EN 175301-803 paragraph 5.3.1 (form A, 18 mm)
PROTECTION DEGREE	IP 65 EN 60529 (DIN 40050) (with connector)
WINDING INSULATION CLASS	class H
COIL INSULATION CLASS	class H (180°C)
COIL ENCAPSULATION MATERIALS	Black PET (polyethylene)

CLASS H

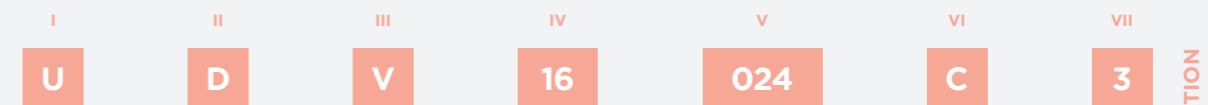
CODE	VOLTAGE / FREQUENCY	POWER RATING	AMBIENT TEMPERATURE	DUTY CYCLE
REDUCED POWER				
UDV12012C3	12 V DC	13 W	-40°C +75°C	100%
UDV12024C3	24 V DC	13 W	-40°C +75°C	100%
UDV12024D3	24 V / 50-60 Hz	18 VA	-40°C +75°C	100%
UDV12110A3	110 V / 50 Hz 120 V / 60 Hz	17 VA	-40°C +75°C	100%
UDV12230A3	230 V / 50 Hz 240 V / 60 Hz	17 VA	-40°C +75°C	100%

- Tolerances on nominal voltages: AC + 10% - 15% DC + 10% - 5%.
- Performances of the valves may vary when using reduced power coils. Please contact ODE before order.



According to Directive 2014/34/EU ATEX

II 3G Ex nA IIC T3 Gc
II 3D Ex tc IIIC T200°C Dc IP 65



I. SERIES

- L** - Width 22 - tube Ø 10
- B** - Width 30 - tube Ø 13
- U** - Width 36 - tube Ø 13
- G** - Width 52 - tube Ø 13

II. ELECTRICAL CONNECTIONS

- B** - connector EN 175301-803 industry standard form B
- D** - connector EN 175301-803 form A
- V** - 2 cables cm 50
- T** - 2 cables cm 20

III. COIL HOUSING MATERIAL

- A** - PA - Black polyamide - class F (155°C)
- V** - PET - Black Polyethylene - class H (180°C)
- H** - PPS - Black Polyphenylsulfide - class N (200°C)

IV. POWER RATING

- 1X** - 1.5 W
- 2X** - 2.5 W
- 4X** - 7.2 VA
- 05** - 5 W - 7 W - 7.7 VA - 9.24 VA - 10 VA - 11.5 VA - 12.5 VA - 13.5 VA
- 5X** - 9.13 VA
- 08** - 8 W - 10 W - 11 W - 14.5 VA - 15 VA - 16 VA - 17 VA
- 10** - 9.9 W - 10.1 W
- 12** - 12 W - 22 VA - 23 VA - 25 VA
- 14** - 14 W - 23 VA - 26 VA - 27 VA
- 16** - 16 W

V. VOLTAGE

- 004** - 4.5 V
- 006** - 6 V
- 009** - 9 V
- 012** - 12 V
- 024** - 24 V
- 110** - 110 V / 50 Hz - 120 V / 60 Hz *
- 112** - 110 - 120 V
- 220** - 220 V
- 223** - 220-230 V
- 224** - 220-240 V
- 230** - 230 V / 50 Hz - 240 V / 60 Hz *
- 240** - 240 V
- 380** - 380 V

* Voltage code 110 A = 110 V / 50 Hz - 120 V / 60 Hz ED 100%
Voltage code 230 A = 230 V / 50 Hz - 240 V / 60 Hz ED 100%

VI. FREQUENCY

- A** - 50 Hz ED 100% *
- B** - 60 Hz ED 100%
- C** - D.C. ED 100%
- D** - 50/60 Hz ED 100%
- E** - 50 Hz ED 50%
- H** - D.C. ED 50%
- L** - Latching coils

VII. APPROVALS

- 3** - ATEX approval

CODIFICATION

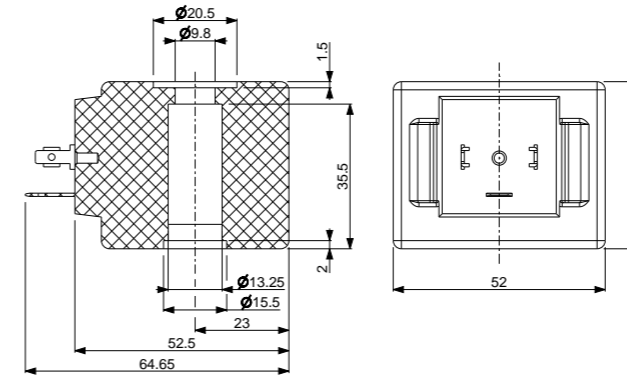
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- The coils must be used only with ATEX type Ex II 3GD IP65 connector, ODE code P992221.
- The connector must be ordered separately.
- The power values are referred to holding phase for AC voltages and to cold values for DC voltages.
- Coil encapsulation and bobbin are made of 100% virgin material.
- Other voltages and power absorptions available on demand and for minimum order quantities. Please contact ODE for further information.

G Ex nA SERIES

Coils, Atex

G Series coils are 52 mm wide, suitable for armature tubes with diameter 13 mm.



Coils ■ Atex ■ G EX NA SERIES

TECHNICAL DATA

ELECTRICAL CONNECTIONS	EN 175301-803 paragraph 5.3.1 (form A, 18 mm)
PROTECTION DEGREE	IP 65 EN 60529 (DIN 40050) (with connector)
WINDING INSULATION CLASS	class H
COIL INSULATION CLASS	class H (180°C)
COIL ENCAPSULATION MATERIALS	Black PET (polyethylene)

DIN CONNECTIONS CLASS H

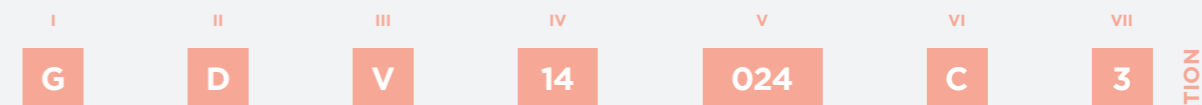
CODE	VOLTAGE / FREQUENCY	POWER RATING	AMBIENT TEMPERATURE	DUTY CYCLE
GDV14012C3	12 V DC	14 W	-40°C +85°C	100%
GDV14024C3	24 V DC	14 W	-40°C +85°C	100%
GDV14024D3	24 V / 50-60 Hz	27 VA	-40°C +75°C	100%
GDV14110A3	110 V / 50 Hz 120 V / 60 Hz	27 VA	-40°C +75°C	100%
GDV14230AY	230 V / 50 Hz 240 V / 60 Hz	31 VA	-40°C +75°C	100%

■ Tolerances on nominal voltages: AC + 10% - 15% DC + 10% - 5%.



According to Directive 2014/34/EU ATEX

II 3G Ex nA IIC T3 Gc
II 3D Ex tc IIIC T200°C Dc IP 65



I. SERIES

- L - Width 22 - tube Ø 10
- B - Width 30 - tube Ø 13
- U - Width 36 - tube Ø 13
- G - Width 52 - tube Ø 13

II. ELECTRICAL CONNECTIONS

- B - connector EN 175301-803 industry standard form B
- D - connector EN 175301-803 form A
- V - 2 cables cm 50
- T - 2 cables cm 20

III. COIL HOUSING MATERIAL

- A - PA - Black polyamide - class F (155°C)
- V - PET - Black Polyethylene - class H (180°C)
- H - PPS - Black Polyphenylsulfide - class N (200°C)

IV. POWER RATING

- 1X - 1.5 W
- 2X - 2.5 W
- 4X - 7.2 VA
- 05 - 5 W - 7 W - 7.7 VA - 9.24 VA - 10 VA - 11.5 VA - 12.5 VA - 13.5 VA
- 5X - 9.13 VA
- 08 - 8 W - 10 W - 11 W - 14.5 VA - 15 VA - 16 VA - 17 VA
- 10 - 9.9 W - 10.1 W
- 12 - 12 W - 22 VA - 23 VA - 25 VA
- 14 - 14 W - 23 VA - 26 VA - 27 VA
- 16 - 16 W

V. VOLTAGE

- 004 - 4.5 V
- 006 - 6 V
- 009 - 9 V
- 012 - 12 V
- 024 - 24 V
- 110 - 110 V / 50 Hz - 120 V / 60 Hz *
- 112 - 110 - 120 V
- 220 - 220 V
- 223 - 220-230 V
- 224 - 220-240 V
- 230 - 230 V / 50 Hz - 240 V / 60 Hz *
- 240 - 240 V
- 380 - 380 V

* Voltage code 110 A = 110 V / 50 Hz - 120 V / 60 Hz ED 100%
Voltage code 230 A = 230 V / 50 Hz - 240 V / 60 Hz ED 100%

VI. FREQUENCY

- A - 50 Hz ED 100% *
- B - 60 Hz ED 100%
- C - D.C. ED 100%
- D - 50/60 Hz ED 100%
- E - 50 Hz ED 50%
- H - D.C. ED 50%
- L - Latching coils

VII. APPROVALS

- 3 - ATEX approval

CODIFICATION

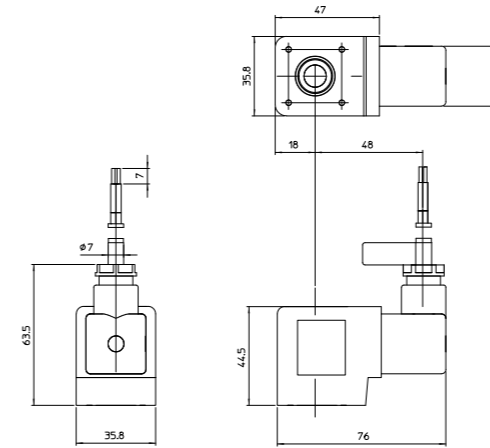
Please read and agree our GENERAL CONDITIONS before placing an order. All the information are exclusive ownership of ODE S.r.l. All rights reserved ©ODE S.r.l.

■ The coils must be used only with ATEX type Ex II 3GD IP65 connector, ODE code P992221.
 ■ The connector must be ordered separately.
 ■ The power values are referred to holding phase for AC voltages and to cold values for DC voltages.
 ■ Coil encapsulation and bobbin are made of 100% virgin material.
 ■ Other voltages and power absorptions available on demand and for minimum order quantities. Please contact ODE for further information.

TNA Ex mb SERIES

Coils, Atex

TNA Series coils are 36 mm wide, suitable for armature tubes with diameter 14,5 mm.



Coils ■ Atex ■ **TNA EX M SERIES**

TECHNICAL DATA

ELECTRICAL CONNECTIONS	three-pole cable Ø 1,5 lenght cm 300 PTB 03 ATEX 2086 X
PROTECTION DEGREE	IP 65 EN 60529 (DIN 40050)
WINDING INSULATION CLASS	class F
COIL INSULATION CLASS	class F (155°C)
COIL ENCAPSULATION MATERIALS	Black PET (polyethylene)
FLUID MAX TEMPERATURE	+80°C

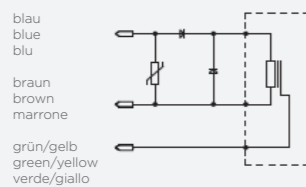
DIN CONNECTIONS CLASS H

CODE	VOLTAGE / FREQUENCY	POWER	RATE CURRENT	FUSE	AMBIENT TEMPERATURE
TNA4X024D4	24 V / 50-60 Hz	7,2 VA	315 mA	800 mA	-20°C +50°C
TNA5X110D4	110 V / 50-60 Hz	9,13 VA	83 mA	200 mA	-20°C +50°C
TNA05224D4	220-240 V / 50-60 Hz	7,7-9,24 VA	35-39 mA	100 mA	-20°C +50°C
TNA10012C4	12 V DC	9,9 W	623 mA	1600 mA	-20°C +50°C
TNA10024C4	24 V DC	10,1 W	421 mA	800 mA	-20°C +50°C

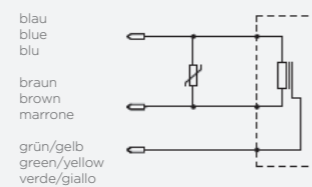
- Tolerances on nominal voltages: ± 10%.
- Each solenoid operator has to be protected by a fuse according to the rated current (max. 3x rated current according to IEC 60127-2-1). The fuse can be accommodated in the associated device or must be added separately. The rated fuse voltage has to be equal or higher than the nominal solenoid voltage. The shutdown capability has to be equal or higher than the maximum assumed short-circuit current at the installation point (usually 1500 A).

According to Directive 2014/34/EU ATEX
 II 2G Ex mb IIC T4 Gc
 II 2D Ex mb tb IIIC T130°C Db

Spulenchaltung - Gleichstrom
 coil wiring - direkt current
 avvolgimento bobina - corrente continua



Spulenchaltung - Gleichstrom
 coil wiring - direkt current
 avvolgimento bobina - corrente continua



I	II	III	IV	V	CODIFICATION
TNA	10	024	C	4	
I. SERIES TNA - Width 36 - tube Ø 14 with integrated connector II. POWER RATING 4X - 7,2 VA 05 - 5 W - 7 W - 7,7 VA - 9,24 VA - 10 VA - 11,5 VA - 12,5 VA - 13,5 VA 5X - 9,13 VA 10 - 9,9 W - 10,1 W		III. VOLTAGE 012 - 12 V 024 - 24 V 110 - 110 V 224 - 220-240 V IV. FREQUENCY C - D.C. ED 100% D - 50/60 Hz ED 100%	V. APPROVALS 4 - ATEX approval		

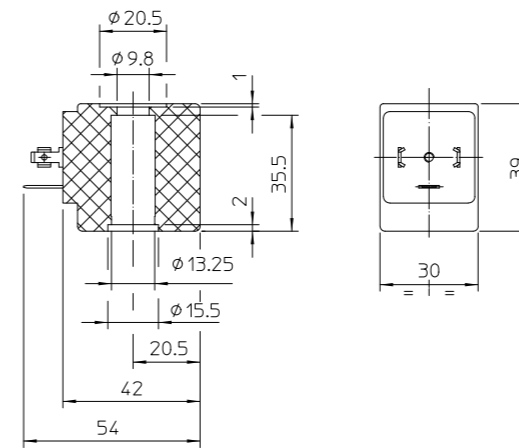
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▪ Other voltages and power absorptions available on demand and for minimum order quantities. Please contact ODE for further information.

B SERIES for Ex d incl.

Coils, Atex

B Series coils are 30 mm wide, suitable for armature tubes with diameter 13 mm. These coils are the only ones that can be used with Atex valves with Ex d type protection.



Coils ■ Atex ■ **B EX D SERIES**

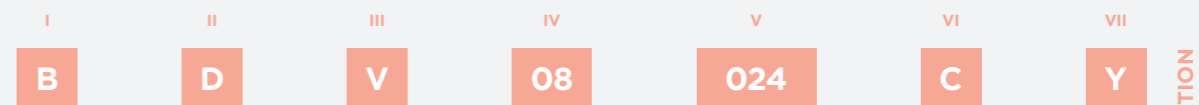
TECHNICAL DATA

ELECTRICAL CONNECTIONS	EN 175301-803 paragraph 5.3.1 (form A, 18 mm)
PROTECTION DEGREE	IP 65 EN 60529 (DIN 40050) (with connector)
WINDING INSULATION CLASS	class H
COIL INSULATION CLASS	class H (180°C)
COIL ENCAPSULATION MATERIALS	Black PET (polyethylene)

DIN CONNECTIONS CLASS H

CODE	VOLTAGE / FREQUENCY	POWER RATING	AMBIENT TEMPERATURE	DUTY CYCLE	APPROVALS
BDV08012CY	12 V DC	11 W	-40°C +60°C	100%	CE Ex A B C D E H L
BDV08024CY	24 V DC	11 W	-40°C +60°C	100%	CE Ex A B C D E H L
BDV08024DY	24 V / 50-60 Hz	17 VA	-40°C +60°C	100%	CE Ex A B C D E H L
BDV08048CY	48 V DC	10 W	-40°C +60°C	100%	CE Ex A B C D E H L
BDV08048DY	48 V / 50-60 Hz	15 VA	-40°C +60°C	100%	CE Ex A B C D E H L
BDV08110AY	110 V / 50 Hz 120 V / 60 Hz	15 VA	-40°C +60°C	100%	CE Ex A B C D E H L
BDV08110CY	110 V DC	11 W	-40°C +60°C	100%	CE Ex A B C D E H L
BDV08230CY	230 V DC	10 W	-40°C +60°C	100%	CE Ex A B C D E H L
BDV08230AY	230 V / 50 Hz 240 V / 60 Hz	16 VA	-40°C +60°C	100%	CE Ex A B C D E H L

■ Tolerances on nominal voltages: AC +10% -15% DC +10% -5%



- I. SERIES**
 - L - Width 22 - tube Ø 10
 - B - Width 30 - tube Ø 13
 - U - Width 36 - tube Ø 13
 - G - Width 52 - tube Ø 13
- II. ELECTRICAL CONNECTIONS**
 - B - connector EN 175301-803 industry standard form B
 - D - connector EN 175301-803 form A
 - V - 2 cables cm 50
 - T - 2 cables cm 20
- III. COIL HOUSING MATERIAL**
 - A - PA - Black polyamide - class F (155°C)
 - V - PET - Black Polyethylene - class H (180°C)
 - H - PPS - Black Polyphenylsulfide - class N (200°C)
- IV. POWER RATING**
 - 1X - 1.5 W
 - 2X - 2.5 W
 - 4X - 7.2 VA
 - 05 - 5 W - 7 W - 7.7 VA - 9.24 VA - 10 VA - 11.5 VA - 12.5 VA - 13.5 VA
 - 5X - 9.13 VA
 - 08 - 8 W - 10 W - 11 W - 14.5 VA - 15 VA - 16 VA - 17 VA
 - 10 - 9.9 W - 10.1 W
 - 12 - 12 W - 22 VA - 23 VA - 25 VA
 - 14 - 14 W - 23 VA - 26 VA - 27 VA
 - 16 - 16 W
- V. VOLTAGE**
 - 004 - 4.5 V
 - 006 - 6 V
 - 009 - 9 V
 - 012 - 12 V
 - 024 - 24 V
 - 110 - 110 V / 50 Hz - 120 V / 60 Hz *
 - 112 - 110 -120 V
 - 220 - 220 V
 - 223 - 220-230 V
 - 224 - 220-240 V
 - 230 - 230 V / 50 Hz - 240 V / 60 Hz *
 - 240 - 240 V
 - 380 - 380 V
- VI. FREQUENCY**
 - A - 50 Hz ED 100% *
 - B - 60 Hz ED 100%
 - C - D.C. ED 100%
 - D - 50/60 Hz ED 100%
 - E - 50 Hz ED 50%
 - H - D.C. ED 50%
 - L - Latching coils
- VII. APPROVALS**
 - Y - CE, UL, CSA, VDE approval

* Voltage code 110 A = 110 V / 50 Hz - 120 V / 60 Hz ED 100%
Voltage code 230 A = 230 V / 50 Hz - 240 V / 60 Hz ED 100%

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■ The power values are indicative, as they change as a function of magnetic kit used.
 ■ The power values are referred to holding phase for AC voltages and to cold values for DC voltages.
 ■ Coil encapsulation and bobbin are made of 100% virgin material.
 ■ Other voltages and power absorptions available on demand and for minimum order quantities. Please contact ODE for further information.

9 ACCESSORIES

COIL CONNECTORS

P990305 - P990307 - P992378	289
P992221 - P992257 ATEX	291

ANTIHUMIDITY KIT

R453382	293
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CHECK VALVES

400 SERIES	295
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RELIEF VALVES

400 SERIES	299
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FLOWMETERS

AB32 SERIES	301
AK66 SERIES	303

P992221 - P992257 ATEX

Coil connectors

Series of ATEX approved plugs for the connection of electrical components accordance with EN 175301-803.



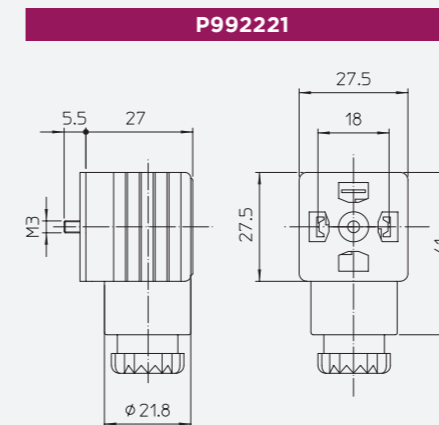
Accessories ■ Coil connectors ■ P992221 - P992257 ATEX

TECHNICAL DATA

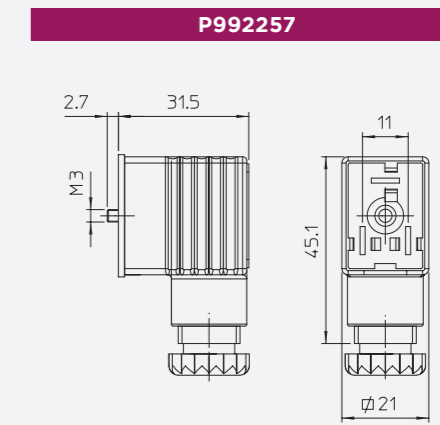
CODE	P992221	P992257
COMPATIBLE COILS	B, U, G SERIES	L SERIES
ELECTRICAL STANDARD	EN 175301-803	EN 175301-803
NUMBER OF CONTACTS	2 + EARTH	2 + EARTH
SUPPLY VOLTAGE	AC / DC MAX. 250 V	AC / DC MAX. 250 V
OPERATING CURRENT	10 A	10 A
MAX. CURRENT	16 A	16 A
CONTACT RESISTANCE	≤ 15 MΩ	≤ 4 MΩ
MAX. CONDUCTOR SECTION	1,5 mm	1,5 mm
CABLE DIAMETER	PG 09 (6 ÷ 8 mm) PG 11 (8 ÷ 10 mm)	PG 09 (6 ÷ 8 mm)
PROTECTION CLASS	IP65/67 EN 60529	IP65 EN 60529
INSULATION CLASS	CE	CE
APPROVALS	CE	CE

MATERIALS

HOUSING	PA	PA
SEALING	VMQ (-20°C +80°C)	VMQ (-20°C +80°C)



According to Directive 2014/34/EU ATEX
 II 2G Ex eb IIC T6 Gb
 II 2D Ex tb IIIC T85°C Db IP65/67



According to Directive 2014/34/EU ATEX
 II 2G Ex eb IIC T6 Gb
 II 2D Ex tb IIIC T85°C Db IP65/67

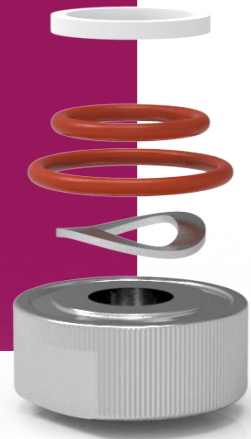


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R453382

Antihumidity Kit

These 2-way dampness-proof kits allow to have coils with protection degree IP67.



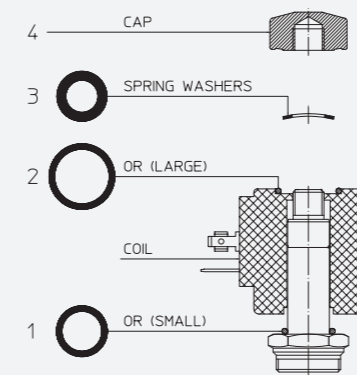
Accessories ■ Antihumidity Kit ■ **R453382**

TECHNICAL DATA

CODE	R453382/B	R453382/G	R453382/S	R453382/U
COMPATIBLE COILS	BDS, BDV SERIES	GDH, GDV SERIES	SDH SERIES	UDV SERIES

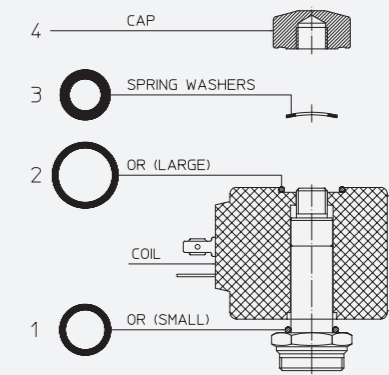
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R453382/B



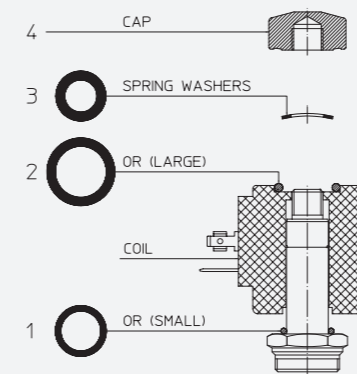
Assemblage sequence: 1 - coil - 2 - 3 - 4

R453382/G



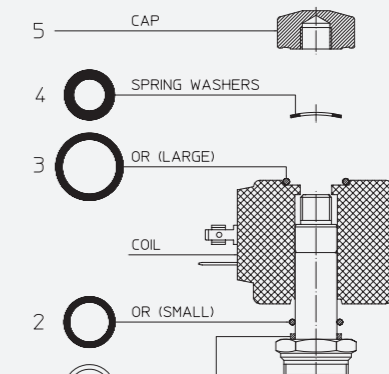
Assemblage sequence: 1 - coil - 2 - 3 - 4

R453382/S



Assemblage sequence: 1 - coil - 2 - 3 - 4

R453382/U



Assemblage sequence: 1 - 2 - coil - 3 - 4

400 SERIES

Check Valves

Series of check valve with brass and stainless steel connections and different sealing options. Wide range of pressure set is available as standard. For special setting please contact ODE.



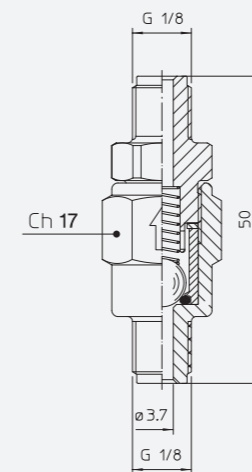
Accessories ■ Check Valves ■ 400 SERIES

TECHNICAL DATA	CODE	400214	400855	400908	400934	400997	401003	401013
	INLET CONNECTION	G 1/8 male	G 1/8 male	G 1/8 female	G 1/8 male	G 1/8 male	R 1/8	R 1/8
	OUTLET CONNECTION	G 1/8 male	G 1/8 male (stainless steel)	G 1/8 male	G 1/8 female	R 1/8	G 1/8 female	G 1/8 female
	MAX OPENING PRESSURE	0,3 bar						
	SEALING MATERIALS	VMQ FKM HNBR						
	FLUID TEMPERATURE	-10°C +100°C -10°C +140°C -30°C +130°C						
	FLUIDS	Water Air, water, oils R 134a, R 404a						

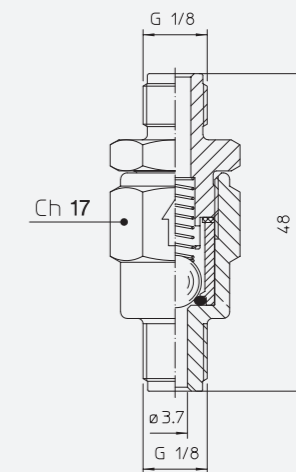
MATERIALS	INLET CONNECTION	Brass
	OUTLET CONNECTION	Brass or Stainless steel AISI series 300
	BUSHING	Brass
	SPRING	Stainless steel AISI series 300
	BALL	Stainless steel
	WASHER	Copper
	SEALING MATERIALS	blank=VMQ, V=FKM, F=HNBR

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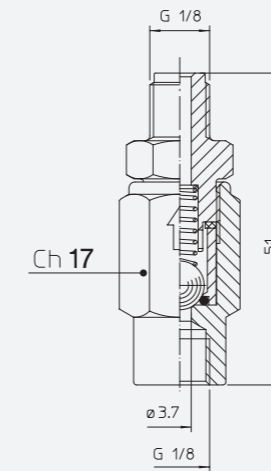
400214



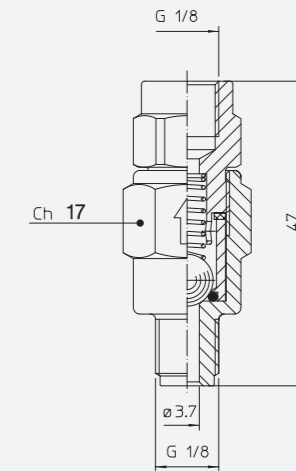
400855



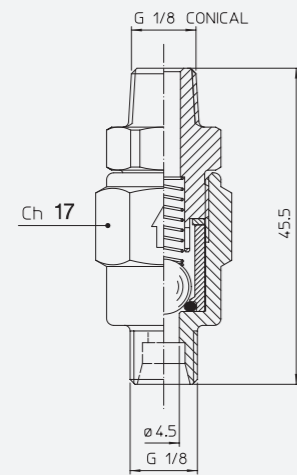
400908



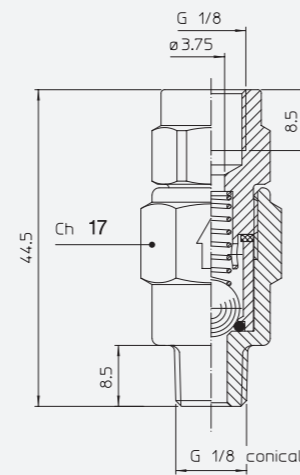
400934



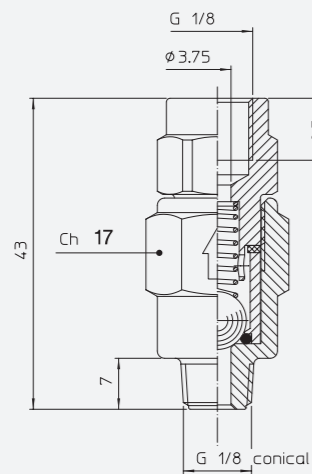
400997



401003



401013



400214

/

S

CODIFICATION

I. SERIES

- 400214 - G 1/8 male inlet - G 1/8 male outlet
- 400855 - G 1/8 male brass inlet - G 1/8 male StSt outlet
- 400908 - G 1/8 female inlet - G 1/8 male outlet
- 400934 - G 1/8 male inlet - G 1/8 female outlet
- 400997 - G 1/8 inlet - R 1/8 outlet
- 401003 - R 1/8 inlet - G 1/8 female outlet
- 401013 - R 1/8 inlet - G 1/8 female outlet

II. SEALING MATERIAL

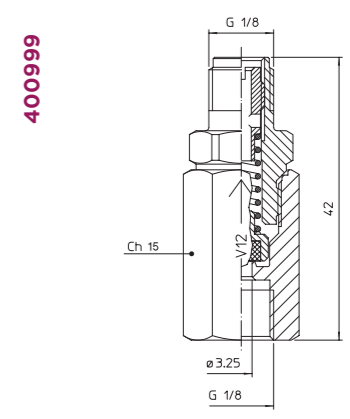
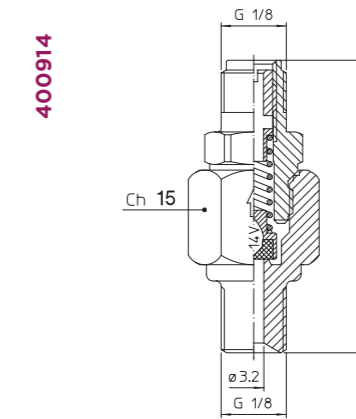
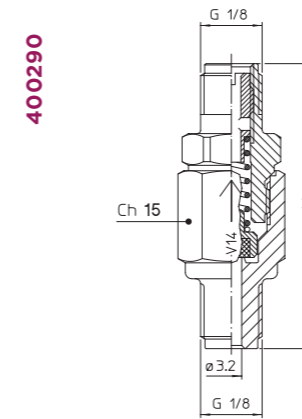
- blank - VMQ
- V - FKM (available only for 400214 series)
- F - HNBR (available only for 400214 and 400934 series)



400 SERIES

Relief Valves

Series of pressure relief valve with brass body and different sealing options. Wide range of pressure set is available as standard. For special setting please contact ODE



Accessories ■ Relief Valves ■ 400 SERIES

TECHNICAL DATA

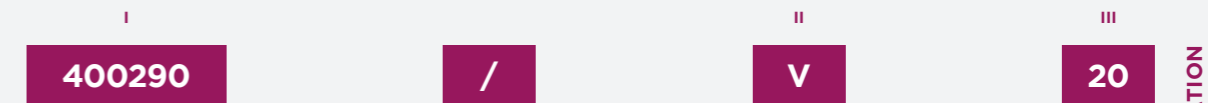
CODE	400290	400914	400999
INLET CONNECTION	G 1/8 male	G 1/8 male	G 1/8 female
OUTLET CONNECTION	G 1/8 male	G 1/8 male	G 1/8 male
SEALING MATERIALS	FKM HNBR		
FLUID TEMPERATURE	-10°C +140°C -30°C +130°C		
FLUIDS	Air, water, oils R 134a, R 404a		

MATERIALS

INLET CONNECTION	Brass
OUTLET CONNECTION	Brass
ADJUSTING SCREW	Brass
SPRING	Stainless steel AISI series 300
SEALING SUPPORT	Brass
SEALING	V=FKM, F=HNBR

PRESSURE RELIEF VALVES

PIPE	ORIFICE [mm]	SET PRESSURE [bar] ± 5%	CODE
G1/8 (M)	3,2	6	400290/V6
		8	400290/V8
		8,5	400290/V8,5
		10	400290/V10
		12	400290/V12
		14	400290/V14
		15	400290/V15
		16	400290/V16
G1/8 (M)	3,2	12	400914/V12
		14	400914/V14
G1/8 (F)	3,2	12	400999/V12



- I. SERIES**
400290 - G 1/8 male inlet - G 1/8 male outlet
400914 - G 1/8 male inlet with internal chamfering - G 1/8 male outlet
400999 - G 1/8 female inlet - G 1/8 male outlet
- II. SEALING MATERIAL**
V - FKM
F - HNBR (available only for 400290 series)
- III. PRESSURE SET [bar] 5%**

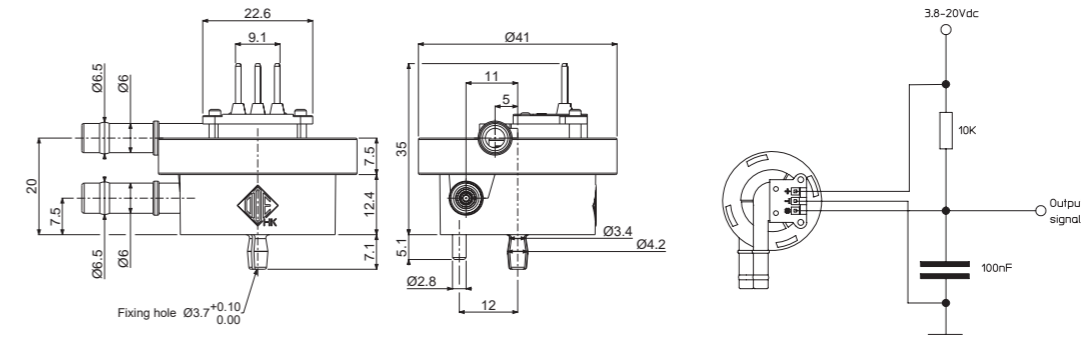
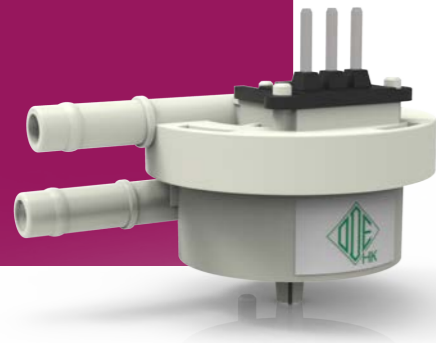
CODIFICATION

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AB32 SERIES

Flowmeters

AB32 series flowmeters are reliable products for the measurement of the flowrate in the circuit. They can work with low pressure fluid at ambient temperature. Different models are available for different flowrate ranges. The different connections orientations allow to install the flowmeter in different circuits.



Accessories ■ Flowmeters ■ **AB32 SERIES**

TECHNICAL DATA

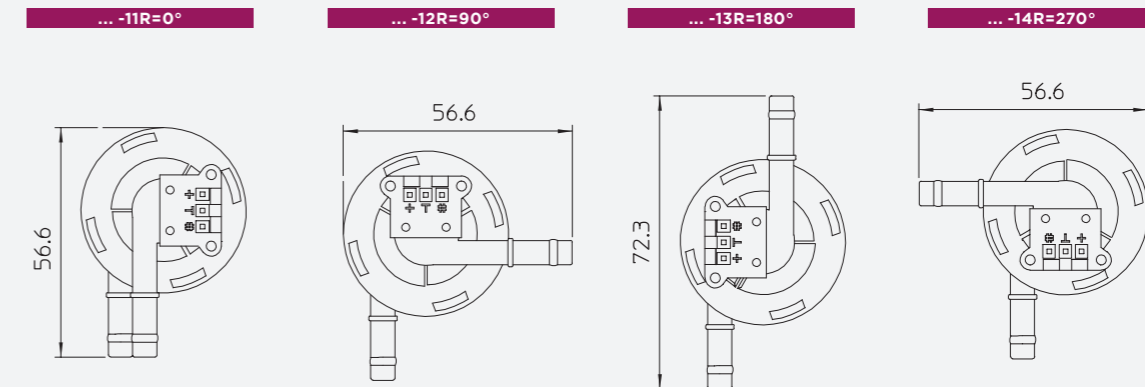
CONNECTOR	Ø 6 mm inlet / outlet
PRESSURE	-1 ÷ 0.3 bar
FLUIDS	water
OPERATING TEMPERATURE	-10°C ÷ +65°C
MOUNTING	Horizontal position
NOZZLE SIZE	Ø 1; 1.2; 1.8; 2; 3 mm
FLOW RATE	see table
MEASURING ACCURACY	± 5% (reference value valid for ideal testing conditions)
CONNECTOR	3.96mm with 3 Pin
SUPPLY VOLTAGE	3.8 ÷ 20 V DC
CONSUMPTION	5 mA max
SIGNAL VOLTAGE	Taken from Ground
LEAKAGE CURRENT	10 µA max
SIGNAL LOAD	20 mA max
SIGNAL	Square wave
DUTY CYCLE	50%

MATERIALS

FLOW METER BODY	PBT 30% GF
SEAL	Silicone
TURNER	PP
MAGNET	SrFeO

CODE	NOZZLE [mm]	PULSES/LITRE	OPTIMUM WORKING RANGE [l/min]	PRESSURE DROP [bar]
AB32-S21PO10C-11R	Ø 1	2382	0,15 - 0,25	0,48
AB32-S21PO12C-11R	Ø 1,2	1925	0,20 - 0,35	0,42
AB32-S21PO18C-11R	Ø 1,8	1315	0,35 - 0,45	0,25
AB32-S21PO20C-11R	Ø 2	1250	0,40 - 0,50	0,21
AB32-S21PO30C-11R	Ø 3	800	0,40 - 0,80	0,15

- The values indicated are obtained on the test bench in ideal conditions with connectors orientation of 0° (...-11R).
- For different orientations connections replace -11R with the desired code. Please refer to next page.
- Due to differences of medium, circuit or installation of the product these values can be slightly different.
- Calibration of number of pulses/litre is recommended for different installations.



CONNECTING ORIENTATION

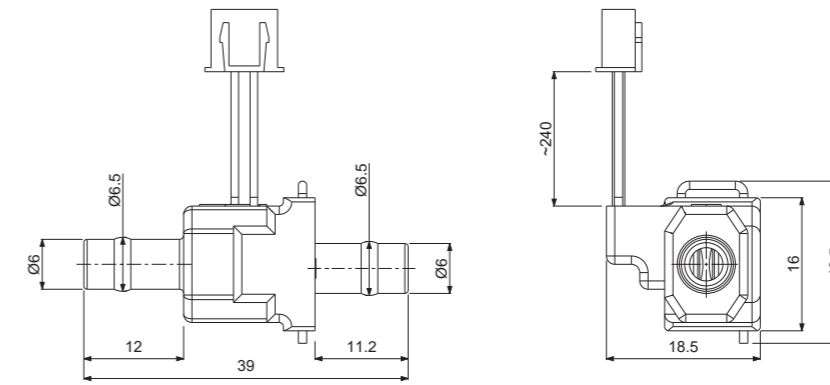
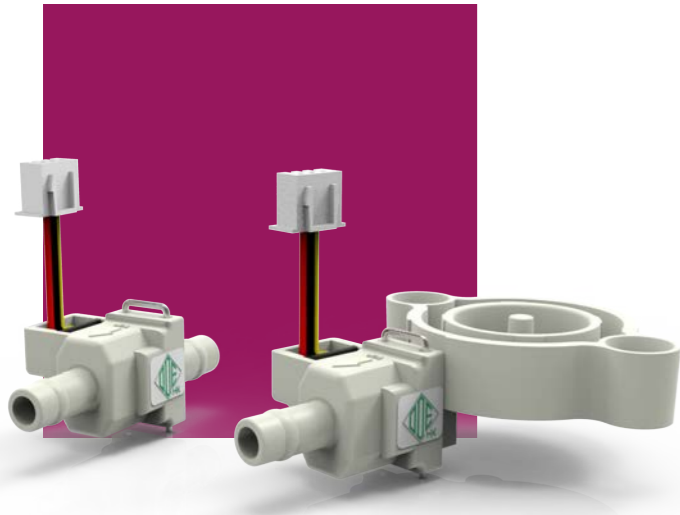
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- ODE is the official distributor of the products marked ODEHK.
- ODEHK reserves the right to carry out technical and aesthetical modifications without prior notice.
- For any request for Product certificate, please contact ODE Sales Office.

AK66 SERIES

Flowmeters

AK66 series flowmeters are reliable products for the measurement of the flowrate in the circuit. They can work with low pressure fluid at ambient temperature. Their extremely compact design allows to use the component in applications in which the space is limited. It is also possible to develop a solution with flowmeter integrated in the water tank holder.



Accessories ■ Flowmeters ■ **AK66 SERIES**

TECHNICAL DATA

CONNECTOR	Ø 6 mm inlet / outlet
PRESSURE	-1 ÷ 0.3 bar
FLUIDS	water
OPERATING TEMPERATURE	-10°C ÷ +65°C
MOUNTING	Horizontal position
NOZZLE SIZE	1,5 mm
FLOW RATE	see table
MEASURING ACCURACY	± 5% (reference value valid for optimal testing conditions)
CONNECTOR	XHP-3 Equivalent
SUPPLY VOLTAGE	3.8 ÷ 20 V DC
CONSUMPTION	8 mA max
SIGNAL VOLTAGE	Taken from Ground
LEAKAGE CURRENT	10 µA max
SIGNAL LOAD	20 mA max
SIGNAL	Square wave
DUTY CYCLE	50%

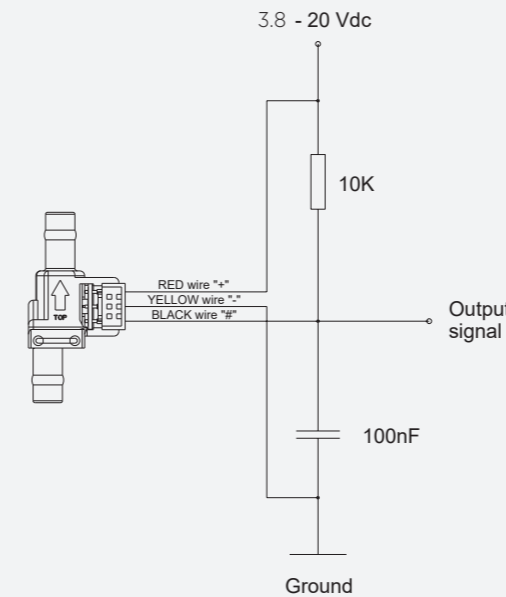
MATERIALS

FLOW METER BODY	PP 30% GF
SEAL	silicone
TURNER	PP 30% GF
MAGNET	Ferrite

	CODE	NOZZLE (mm)	PULSES/LITRE	MIN FLOW RATE AT LINEAR START [l/min]	MAX FLOW RATE [l/min]
STANDARD VERSION	AK66-01R	Ø 1,5	9804	0,070	1,200

- The values indicated are obtained on the test bench in ideal conditions.
- Due to differences of medium, circuit or installation of the product these values can be slightly different.
- Calibration of number of pulses/litre is recommended for different installations.

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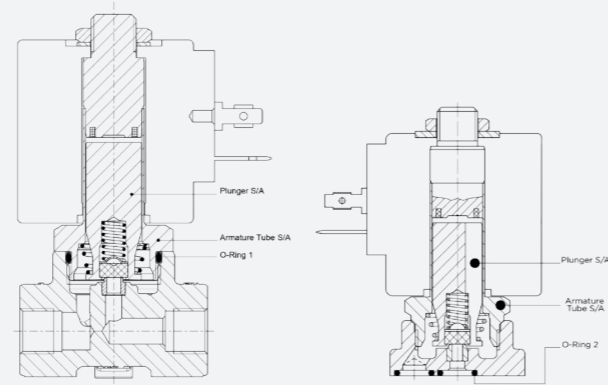


- ODE is the official distributor of the products marked ODEHK.
- ODEHK reserves the right to carry out technical and aesthetical modifications without prior notice.
- For any request for Product certificate, please contact ODE Sales Office.

10 SPARES

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21A - 21L - 21ALB SERIES



2/2 NC SOFT - SEALING

GROUP	VALVE CODE	SEALING MATERIAL	I II III IV				KIT	KIT COMP.
			PLUNGER	ARMATURE TUBE	O-RING 1	O-RING 2		
21A3	21A3KV10 to 21A3KV30	FKM	R450886/V	R450606	-	-	KT130KV30-A	I + II
	21A3KV45	FKM	R450898/V	R450606	-	-	KT130KV55-A	I + II
	21A3KB10 to 21A3KB30	NBR	R450886/B	R450606	-	-	KT130KB30-A	I + II
	21A3KB45	NBR	R450898/B	R450606	-	-	KT130KB55-A	I + II
	21A3KE10 to 21A3KE30	EPDM	R450886/E	R450606	-	-	KT130KE30-A	I + II
	21A3KE45	EPDM	R450898/E	R450606	-	-	KT130KE55-A	I + II
21A2	21A2KV10 to 21A2KV30	FKM	R450886/V	R450606	-	-	KT130KV30-A	I + II
	21A2KV45	FKM	R450898/V	R450606	-	-	KT130KV55-A	I + II
	21A2KB10 to 21A2KB30	NBR	R450886/B	R450606	-	-	KT130KB30-A	I + II
	21A2KB45 - 21A2KB55	NBR	R450898/B	R450606	-	-	KT130KB55-A	I + II
	21A2KE10 to 21A2KE30	EPDM	R450886/E	R450606	-	-	KT130KE30-A	I + II
	21A2KE45 - 21A2KE55	EPDM	R450898/E	R450606	-	-	KT130KE55-A	I + II
21A5	21A2KF10 to 21A2KF30	HNBR	R450886/F	R450606	-	-	KT130KF30-A	I + II
	21A2KF45 - 21A2KF55	HNBR	R450898/F	R450606	-	-	KT130KF55-A	I + II
	21A5KV45 - 21A5KV55	FKM	R450898/V	R450606	-	-	KT130KV55-A	I + II
	21A5KB45 - 21A5KB55	NBR	R450898/B	R450606	-	-	KT130KB55-A	I + II
	21A5KE45 - 21A5KE55	EPDM	R450898/E	R450606	-	-	KT130KE55-A	I + II
	21A5KF45 - 21A5KF55	HNBR	R450898/F	R450606	-	-	KT130KF55-A	I + II
21A8	21A8KV45 - 21A8KV55	FKM	R450898/V	R450606	-	-	KT130KV55-A	I + II
	21A8KB45 - 21A8KB55	NBR	R450898/B	R450606	-	-	KT130KB55-A	I + II
	21A8KE45 - 21A8KE55	EPDM	R450898/E	R450606	-	-	KT130KE55-A	I + II
	21A8KF45 - 21A8KF55	HNBR	R450898/F	R450606	-	-	KT130KF55-A	I + II
	21A1KV10 to 21A1KV30	FKM	R450886/V	R450606	-	R990002/S	KT130KV30-A	I + II
	21A1KB10 to 21A1KB30	NBR	R450886/B	R450606	-	R990002/S	KT130KB30-A	I + II
21L1	21A1KE10 to 21A1KE30	EPDM	R450886/E	R450606	-	R990002/S	KT130KE30-A	I + II
	21L1KV20 to 21L1KV30	FKM	R450886/V	R450811	R990000/V	-	KT130KV30-H	I + II + III
	21L1KV40	FKM	R450898/V	R450811	R990000/V	-	KT130KV55-H	I + II + III
	21L1KE20 to 21L1KE30	EPDM	R450886/E	R450811	R990000/E	-	KT130KE30-H	I + II + III
21L2	21L1KE40	EPDM	R450898/E	R450811	R990000/E	-	KT130KE55-H	I + II + III
	21L2KV20 to 21L2KV30	FKM	R450886/V	R450811	R990000/V	R990002/S	KT130KE30-H	I + II + III
	21L2KV40 - 21L2KV55	FKM	R450898/V	R450811	R990000/V	R990002/S	KT130KE55-H	I + II + III
	21L2KE20 to 21L2KE30	EPDM	R450886/E	R450811	R990000/E	R990002/S	KT130KE30-H	I + II + III
21ALB	21L2KE40 - 21L2KE55	EPDM	R450898/E	R450811	R990000/E	R990002/S	KT130KE55-H	I + II + III
	21ALBK1V15 to 21ALBK1V30	FKM	R450886/V	R450811	R990000/V	R990002/S	KT130KE30-H	I + II + III
	21ALBK1E15 to 21ALBK1E30	EPDM	R450886/E	R450811	R990000/E	R990002/S	KT130KE55-H	I + II + III

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2/2 NC PTFE SEALING

GROUP	VALVE CODE	SEALING MATERIAL	I II III IV				KIT	KIT COMP.
			PLUNGER	ARMATURE TUBE	O-RING 1	O-RING 2		
21A3	21A3KT10 to 21A3KT30	PTFE	R450886/T	R450606	-	-	KT130KT30-A	I + II
	21A3KT45	PTFE	R451234/T	R450606	-	-	KT130KT55-A	I + II
21A2	21A2KT10 to 21A2KT30	PTFE	R450886/T	R450606	-	-	KT130KT30-A	I + II
	21A2KT45 - 21A2KT55	PTFE	R451234/T	R450606	-	-	KT130KT55-A	I + II
21A5	21A5KT45 - 21A5KT55	PTFE	R451234/T	R450606	-	-	KT130KT55-A	I + II
21L1	21A8KT45 - 21A8KT55	PTFE	R451234/T	R450606	-	-	KT130KT55-A	I + II
	21L1KIT25 - 21L1KIT30	PTFE	R450886/T	R450811	R990000/T	-	KT130KT30-H	I + II + III
21L2	21L1KIT40	PTFE	R451234/T	R450811	R990000/T	-	KT130KT55-H	I + II + III
	21L2KIT20 to 21L2KIT30	PTFE	R450886/T	R450811	R990000/T	-	KT130KT30-H	I + II + III
21L2	21L2KIT40 - 21L2KIT55	PTFE	R451234/T	R450811	R990000/T	-	KT130KT55-H	I + II + III

2/2 NC RUBY SEALING

GROUP	VALVE CODE	SEALING MATERIAL	I II III IV				KIT	KIT COMP.
			PLUNGER	ARMATURE TUBE	O-RING 1	O-RING 2		
21A3	21A3KR10 to 21A3KR30	RUBY	R450820/R	R450606	-	-	KT130KR30-A	I + II
21A2	21A2KR10 to 21A2KR30	RUBY	R450820/R	R450606	-	-	KT130KR30-A	I + II
21A1	21A1KR10 - 21A1KR30	RUBY	R450820/R	R450606	-	R990002/S	KT130KR30-A	I + II

2/2 NC SOFT-SEALING IMPROVED PRESSURE RANGE

GROUP	VALVE CODE	SEALING MATERIAL	I II III IV				KIT	KIT COMP.
			PLUNGER	ARMATURE TUBE	O-RING 1	O-RING 2		
21A3	21A3KV30-W - 21A3KV45-W	FKM	R453494/V	R450606	-	-	KT130KV55-AM	I + II
	21A3KB30-W - 21A3KB45-W	NBR	R453494/B	R450606	-	-	KT130KB55-AM	I + II
	21A3KE30-W - 21A3KE45-W	EPDM	R453494/E	R450606	-	-	KT130KE55-AM	I + II
21A2	21A2KV25-W to 21A2KV55-W	FKM	R453494/V	R450606	-	-	KT130KV55-AM	I + II
	21A2KB25-W to 21A2KB55-W	NBR	R453494/B	R450606	-	-	KT130KB55-AM	I + II
	21A2KE25-W to 21A2KE55-W	EPDM	R453494/E	R450606	-	-	KT130KE55-AM	I + II
21A5	21A5KV25-W to 21A5KV55-W	FKM	R453494/V	R450606	-	-	KT130KV55-AM	I + II
	21A5KB25-W to 21A5KB55-W	NBR	R453494/B	R450606	-	-	KT130KB55-AM	I + II
	21A5KE25-W to 21A5KE55-W	EPDM	R453494/E	R450606	-	-	KT130KE55-AM	I + II
21A8	21A8KV25-W to 21A8KV55-W	FKM	R453494/V	R450606	-	-	KT130KV55-AM	I + II
	21A8KB25-W to 21A8KB55-W	NBR	R453494/B	R450606	-	-	KT130KB55-AM	I + II
	21A8KE25-W - 21A8KE55-W	EPDM	R453494/E	R450606	-	-	KT130KE55-AM	I + II
	21A8KV80-W	FKM	R453314/V	R450606	-	-	KT130KV55-AM	I + II
21A1	21A8KB80-W	NBR	R453314/B	R450606	-	-	KT130KB55-AM	I + II
	21A8KE80-W	EPDM	R453314/E	R450606	-	-	KT130KE55-AM	I + II
	21A1KV30-W - 21A1KV45-W	FKM	R453494/V	R450606	-	R990002/S	KT130KV55-AM	I + II
21L1	21A1KB30-W - 21A1KB45-W	NBR	R453494/B	R450606	-	R990002/S	KT130KB55-AM	I + II
	21A1KE30-W - 21A1KE45-W	EPDM	R453494/E	R450606	-	R990002/S	KT130KE55-AM	I + II
	21L1KV40-W	FKM	R453494/V	R450811	R990000/V	-	-	I + II + III
21L2	21L1KE40-W	EPDM	R453494/E	R450811	R990000/E	-	-	I + II + III
	21L2KV25-W to 21L2KV55-W	FKM	R453494/V	R450811	R990000/V	-	-	I + II + III
21ALB	21L2KE25-W to 21L2KE55-W	EPDM	R453494/E	R450811	R990000/E	-	-	I + II + III
	21ALBK1V40-W	FKM	R453494/V	R450811	R990000/V	R990002/S	-	I + II + III

2/2 NC PTFE SEALING
IMPR. PRESS. RANGE

GROUP	VALVE CODE	SEALING MATERIAL	I		II		III		IV	
			PLUNGER	ARMATURE TUBE	O-RING 1	O-RING 2	KIT	KIT COMP.		
21A2	21A2KT30-W to 21A2KT55-W	PTFE	R451234/T-2561	R450606	-	-	-	-	KT130KT55-AM	I + II
21A5	21A5KT45-W - 21A5KT55-W	PTFE	R451234/T-2561	R450606	-	-	-	-	KT130KT55-AM	I + II
21A8	21A8KT45-W - 21A8KT55-W	PTFE	R451234/T-2561	R450606	-	-	-	-	KT130KT55-AM	I + II
21L1	21LIKIT40-W	PTFE	R451234/T-2561	R450811	R990000/T	-	-	-	-	I + II + III
21L2	21L2KIT55-W	PTFE	R451234/T-2561	R450811	R990000/T	-	-	-	-	I + II + III

2/2 NO SOFT-SEALING

GROUP	VALVE CODE	SEALING MATERIAL	I		II		III		IV	
			PLUNGER	ARMATURE TUBE	O-RING 1	O-RING 2	KIT	KIT COMP.		
21A3	21A3ZV10D to 21A3ZV30D	FKM	R450788/V	R453459	R990000/V	-	-	-	KT130ZV30-F	I + II + III
	21A3ZV45D	FKM	R450786/V	R453459	R990000/V	-	-	-	KT130ZV30-G	I + II + III
	21A3ZV10G to 21A3ZV30G	FKM	R450788/V14	R453459	R990000/V	-	-	-	KT130ZV55-F	I + II + III
	21A3ZV45G	FKM	R450786/V14	R453459	R990000/V	-	-	-	KT130ZV55-G	I + II + III
	21A3ZB10D to 21A3ZB30D	NBR	R450788/G	R453459	R990000/G	-	-	-	KT130ZB30-F	I + II + III
	21A3ZB45D	NBR	R450786/B	R453459	R990000/G	-	-	-	KT130ZB30-G	I + II + III
	21A3ZB10G to 21A3ZB30G	NBR	R450788/G14	R453459	R990000/G	-	-	-	KT130ZB55-F	I + II + III
	21A3ZB45G	NBR	R450786/B14	R453459	R990000/G	-	-	-	KT130ZB55-G	I + II + III
	21A3ZE10D to 21A3ZE30D	EPDM	R450788/E	R453459	R990000/E	-	-	-	KT130ZE30-F	I + II + III
	21A3ZE45D	EPDM	R450786/E	R453459	R990000/E	-	-	-	KT130ZE30-G	I + II + III
21A2	21A3ZE10G to 21A3ZE30G	EPDM	R450788/E14	R453459	R990000/E	-	-	-	KT130ZE55-F	I + II + III
	21A3ZE45G	EPDM	R450786/E14	R453459	R990000/E	-	-	-	KT130ZE55-G	I + II + III
	21A2ZV12D to 21A2ZV30D	FKM	R450788/V	R453459	R990000/V	-	-	-	KT130ZV30-F	I + II + III
	21A2ZV45D - 21A2ZV55D	FKM	R450786/V	R453459	R990000/V	-	-	-	KT130ZV30-G	I + II + III
	21A2ZV10G to 21A2ZV30G	FKM	R450788/V14	R453459	R990000/V	-	-	-	KT130ZV55-F	I + II + III
	21A2ZV45G - 21A2ZV55G	FKM	R450786/V14	R453459	R990000/V	-	-	-	KT130ZV55-G	I + II + III
	21A2ZB10D to 21A2ZB30D	NBR	R450788/G	R453459	R990000/G	-	-	-	KT130ZB30-F	I + II + III
	21A2ZB45D - 21A2ZB55D	NBR	R450786/B	R453459	R990000/G	-	-	-	KT130ZB30-G	I + II + III
	21A2ZB10G to 21A2ZB30G	NBR	R450788/G14	R453459	R990000/G	-	-	-	KT130ZB55-F	I + II + III
	21A2ZB45G - 21A2ZB55G	NBR	R450786/B14	R453459	R990000/G	-	-	-	KT130ZB55-G	I + II + III
21A5	21A2ZE10D to 21A2ZE30D	EPDM	R450788/E	R453459	R990000/E	-	-	-	KT130ZE30-F	I + II + III
	21A2ZE45G - 21A2ZE55G	EPDM	R450786/E	R453459	R990000/E	-	-	-	KT130ZE30-G	I + II + III
	21A2ZE10G to 21A2ZE30G	EPDM	R450788/E14	R453459	R990000/E	-	-	-	KT130ZE55-F	I + II + III
	21A2ZE45G - 21A2ZE55G	EPDM	R450786/E14	R453459	R990000/E	-	-	-	KT130ZE55-G	I + II + III
	21A5ZV45D - 21A5ZV55D	FKM	R450786/V	R453459	R990000/V	-	-	-	KT130ZV55-F	I + II + III
	21A5ZV45G - 21A5ZV55G	FKM	R450786/V14	R453459	R990000/V	-	-	-	KT130ZV55-G	I + II + III
	21A5ZB45D - 21A5ZB55D	NBR	R450786/B	R453459	R990000/G	-	-	-	KT130ZB55-F	I + II + III
	21A5ZB45G - 21A5ZB55G	NBR	R450786/B14	R453459	R990000/G	-	-	-	KT130ZB55-G	I + II + III
	21A5ZE45D - 21A5ZE55D	EPDM	R450786/E	R453459	R990000/E	-	-	-	KT130ZE55-F	I + II + III
	21A5ZE45G - 21A5ZE55G	EPDM	R450786/E14	R453459	R990000/E	-	-	-	KT130ZE55-G	I + II + III
21A8	21A8ZV45D - 21A8ZV55D	FKM	R450786/V	R453459	R990000/V	-	-	-	KT130ZV55-F	I + II + III
	21A8ZV45G - 21A8ZV55G	FKM	R450786/V14	R453459	R990000/V	-	-	-	KT130ZV55-G	I + II + III
	21A8ZB45D - 21A8ZB55D	NBR	R450786/B	R453459	R990000/G	-	-	-	KT130ZB55-F	I + II + III
	21A8ZB45G - 21A8ZB55G	NBR	R450786/B14	R453459	R990000/G	-	-	-	KT130ZB55-G	I + II + III
	21A8ZE45D - 21A8ZE55D	EPDM	R450786/E	R453459	R990000/E	-	-	-	KT130ZE55-F	I + II + III
	21A8ZE45G - 21A8ZE55G	EPDM	R450786/E14	R453459	R990000/E	-	-	-	KT130ZE55-G	I + II + III
21A1	21A1ZV10D to 21A1ZV30D	FKM	R450788/V	R453459	R990000/V	R990000/S	-	-	KT130ZV30-F	I + II + III
	21A1ZV10G to 21A1ZV30G	FKM	R450788/V14	R453459	R990000/V	R990000/S	-	-	KT130ZV30-G	I + II + III
	21A1ZB10D to 21A1ZB30D	NBR	R450788/G	R453459	R990000/G	R990000/S	-	-	KT130ZB30-F	I + II + III
	21A1ZB10G to 21A1ZB30G	NBR	R450788/G14	R453459	R990000/G	R990000/S	-	-	KT130ZB30-G	I + II + III
	21A1ZE10D to 21A1ZE30D	EPDM	R450788/E	R453459	R990000/E	R990000/S	-	-	KT130ZE30-F	I + II + III
21A1ZE10G to 21A1ZE30G	EPDM	R450788/E14	R453459	R990000/E	R990000/S	-	-	KT130ZE30-G	I + II + III	

2/2 NO SOFT-SEALING

2/2 NO PTFE SEALING

2/2 NO RUBY SEALING

2/2 NC HIGH PRESSURE

GROUP	VALVE CODE	SEALING MATERIAL	I		II		III		IV	
			PLUNGER	ARMATURE TUBE	O-RING 1	O-RING 2	KIT	KIT COMP.		
21L1	21L1ZIV15D - 21L1ZIV30D	FKM	R450788/V	R453459/D	R990000/V	-	-	-	KT130ZV30-H	I + II + III
	21L1ZIE15D - 21L1ZIE30D	EPDM	R450788/E	R453459/D	R990000/E	-	-	-	KT130ZE30-H	I + II + III
21L2	21L2ZIV30D	FKM	R450788/V	R453459/D	R990000/V	-	-	-	KT130ZV30-H	I + II + III
	21L2ZIV40D - 21L2ZIV55D	FKM	R450786/V	R453459/D	R990000/V	-	-	-	-	I + II + III
	21L2ZIV30G	FKM	R450788/V14	R453459/D	R990000/V	-	-	-	-	I + II + III
	21L2ZIV40G - 21L2ZIV55G	FKM	R450786/V14	R453459/D	R990000/V	-	-	-	-	I + II + III
	21L2ZIE30D	FKM	R450788/E	R453459/D	R990000/E	-	-	-	KT130ZE30-H	I + II + III
	21L2ZIE40D - 21L2ZIE55D	FKM	R450786/E	R453459/D	R990000/E	-	-	-	-	I + II + III
	21L2ZIE30G	FKM	R450788/E14	R453459/D	R990000/E	-	-	-	-	I + II + III
	21L2ZIE40G - 21L2ZIE55G	FKM	R450786/E14	R453459/D	R990000/E	-	-	-	-	I + II + III

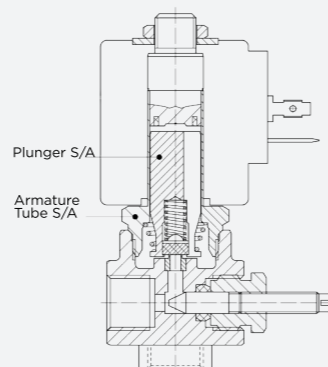
GROUP	VALVE CODE	SEALING MATERIAL	I		II		III		IV	
			PLUNGER	ARMATURE TUBE	O-RING 1	O-RING 2	KIT	KIT COMP.		
21A3	21A3ZT20D	PTFE	R450790	R453459	R990000/T	-	-	-	-	-
21A2	21A2ZT11D - 21A2ZT25D	PTFE	R450790	R453459	R990000/T	-	-	-	KT130ZT30-F	I + II + III
21A5	21A5ZT45G	PTFE	R450790	R453459	R990000/T	-	-	-	-	-
21A1	21A1ZT11D	PTFE	R450790	R453459	R990000/T	R990002/S	-	-	KT130ZT30-F	I + II + III

GROUP	VALVE CODE	SEALING MATERIAL	I		II		III		IV	
			PLUNGER	ARMATURE TUBE	O-RING 1	O-RING 2	KIT	KIT COMP.		
21A3	21A3ZR15D to 21A3ZR30D	RUBY	R450789	R453459	R990000/V	-	-	-	KT130ZR30-F	I + II + III
	21A3ZR15G to 21A3ZR30G	RUBY	R450789/14	R453459	R990000/V	-	-	-	KT130ZR30-G	I + II + III
21A2	21A2ZR15D to 21A2ZR30D	RUBY	R450789	R453459	R990000/V	-	-	-	KT130ZR30-F	I + II + III
	21A2ZR15G to 21A2ZR30G	RUBY	R450789/14	R453459	R990000/V	-	-	-	KT130ZR30-G	I + II + III
21A1	21A1ZR11D to 21A1ZR20D	RUBY	R450789	R453459	R990000/V	R990002/S	-	-	KT130ZR30-F	I + II + III

GROUP	VALVE CODE	SEALING MATERIAL	I		II		III		IV	
			PLUNGER	ARMATURE TUBE	O-RING 1	O-RING 2	KIT	KIT COMP.		
21A3	21A3KOT12-XC	PTFE	R450897	R450606	-	-	-	-	KT130KT30-AP	I + II
	21A2KOT10-XC	PTFE	R450897	R450606	-	-	-	-	KT130KT30-AP	I + II
21A2	21A2KOT12-XC	PTFE	R450897	R450606	-	-	-	-	KT130KT30-AP	I + II
	21A2KOR12-XC	RUBY	R450748	R450606	-	-	-	-	KT130KR30-AP	I + II
21A1	21A2KOR30-XC	RUBY	R450748	R450606	-	-	-	-	KT130KR30-AP	I + II
	21A1KOT12-XC to 21A1KOT30-XC	PTFE	R450897	R450606	-	R990002/S	-	-	KT130KT30-AP	I + II
21L1	21LIKIT15-XC	PTFE	R452889	R450811	R990000/T	-	-	-	-	I + II + III
21L2	21L2KIT15-XC	PTFE	R452889	R450811	R990000/T	-	-	-	-	I + II + III

- **-OR** Replace "ARMATURE TUBE SUBASSEMBLY" with R450603 and add code R990000/* to the column "O-RING 1". Please replace digit * with the same sealing of the valve, i.e. V
- **-ORV** Replace column "O-RING 2" with code R990002/VV
- **-ORT** Replace column "O-RING 2" with code R450894
- **-OX** Replacement of internal parts is not possible for valves used in industrial oxygen service
- **-M** Add R45172/* for manual operator screw. Please replace digit * with the same sealing of the valve, i.e. V
- **-216A** For valves with AISI 316 core tube, i.e. 216A2..., replace the core tube code with R453199 and add O-RING R990000/*, Please replace digit * with the same sealing of the valve, i.e. V

21A16 SERIES

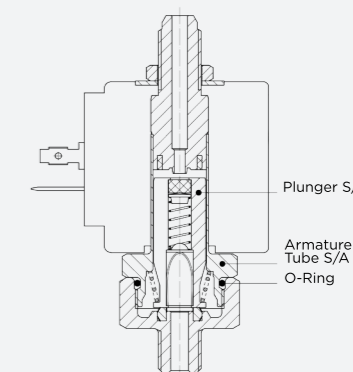


2/2 NC

GROUP	VALVE CODE	SEALING MATERIAL	I		II	
			PLUNGER	ARMATURE TUBE	KIT	KIT COMP.
21A16	21A16KV25	FKM	R450886/V	R450606	KT130KV30-A	I + II
	21A16KV30	FKM	R450886/V	R450606	KT130KV30-A	I + II
	21A16KE25	EPDM	R450886/E	R450606	KT130KE30-A	I + II
	21A16KE30	EPDM	R450886/E	R450606	KT130KE30-A	I + II
	21A16KT25	PTFE	R450886/T	R450606	KT130KT30-A	I + II
	21A16KT30	PTFE	R450886/T	R450606	KT130KT30-A	I + II
	21A16KR25	RUBY	R450820/R	R450606	KT130KR30-A	I + II
	21A16KR30	RUBY	R450820/R	R450606	KT130KR30-A	I + II

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21M0 - 4144 - 5315 SERIES

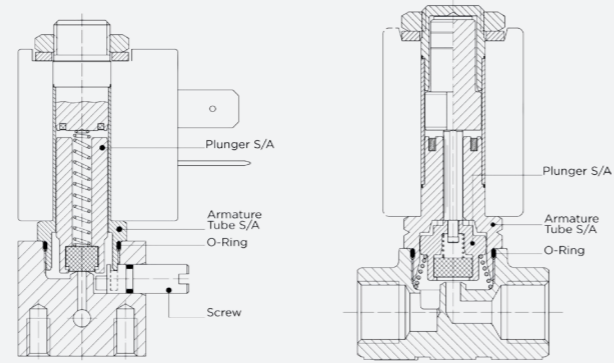


2/2 NO

GROUP	VALVE CODE	SEALING MATERIAL	PLUNGER	ARMATURE TUBE	O-RING
4144	4144W0V15	FKM	R452061/V	R452074	R990597/V
	4144XPV17	FKM	R452061/V	R452095	R990597/V
21M0	21M0AV25	FKM	R450759/V	R450864	R990000/V
	21M0AB25	NBR	R450759/B	R450864	R990000/G
5315	5315A0V25	FKM	R450759/V	R450864	R990000/V
	5315A0B25	NBR	R450759/B	R450864	R990000/G

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21JN - 21JL SERIES



2/2 NC

GROUP	VALVE CODE	SEALING MATERIAL	PLUNGER	ARMATURE TUBE	O-RING	SUBBASE O-RING (EXT.)	SUBBASE O-RING (INT.)	KIT	KIT COMP.
21JN1	21JN1ROV12	FKM	R453740/VX	R452062	R990597/V	-	-	KT100ROV25-FJ	I + II + III
	21JN1ROV15	FKM	R453740/VX	R452062	R990597/V	-	-	KT100ROV25-FJ	I + II + III
	21JN1ROV20	FKM	R453740/VX	R452062	R990597/V	-	-	KT100ROV25-FJ	I + II + III
	21JN1ROV23	FKM	R453740/VX	R452062	R990597/V	-	-	KT100ROV25-FJ	I + II + III
	21JN1ROB12	NBR	R453740/B	R452062	R990597/G	-	-	KT100ROB25-FJ	I + II + III
	21JN1ROB15	NBR	R453740/B	R452062	R990597/G	-	-	KT100ROB25-FJ	I + II + III
	21JN1ROB20	NBR	R453740/B	R452062	R990597/G	-	-	KT100ROB25-FJ	I + II + III
21JBM	21JBMROV20	FKM	R453740/VX	R452062	R990597/V	-	-	KT100ROV25-FJ	I + II + III
	21JBMROB20	NBR	R453740/B	R452062	R990597/G	-	-	KT100ROB25-FJ	I + II + III
21JKB	21JKBROV12	FKM	R453740/VX	R452062	R990597/V	R990557/V	R990169/V	KT100ROV25-FJ	I + II + III
	21JKBROV23	FKM	R453740/VX	R452062	R990597/V	R990557/V	R990169/V	KT100ROV25-FJ	I + II + III
	21JKBROB12	NBR	R453740/B	R452062	R990597/G	R990557/B	R990169/B	KT100ROB25-FJ	I + II + III
	21JKBROB23	NBR	R453740/B	R452062	R990597/G	R990557/B	R990169/B	KT100ROB25-FJ	I + II + III
21JL	21JL1R1V12	FKM	R452428/VX	R452426	R990597/V	-	-	-	-
	21JL1R1V23	FKM	R452428/VX	R452426	R990597/V	-	-	-	-

2/2 NC WITH MAN. OP.

GROUP	VALVE CODE	SEALING MATERIAL	PLUNGER	ARMATURE TUBE	O-RING	SCREW	KIT	KIT COMP.
21JR	21JR1ROV12-M	FKM	R453740/VX	R452062	R990597/V	R450576/V	-	-
	21JR1ROV25-M	FKM	R453740/VX	R452062	R990597/V	R450576/V	-	-

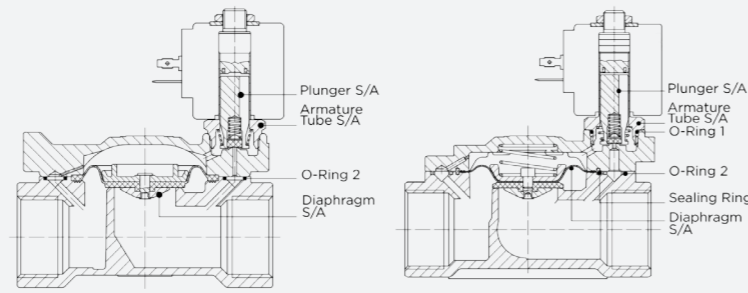
GROUP	VALVE CODE	SEALING MATERIAL	PLUNGER	ARMATURE TUBE	O-RING	SUBBASE O-RING (EXT.)	SUBBASE O-RING (INT.)	KIT	KIT COMP.
21JN1	21JN1IOV12	FKM	R452964/V	R452959	R990597/V	-	-	KT100IOV25-F	I + II + III
21JKB	21JKBIOV12	FKM	R452964/V	R452959	R990597/V	R990557/V	R990169/V	KT100IOV25-F	I + II + III
21JL	21JL1IOV12	FKM	R452964/V	R452959	R990597/V	-	-	KT100IOV25-F	I + II + III

2/2 NO

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- OX Replacement of internal parts is not possible for valves used in industrial oxygen service
- 216JN For valves with AISI 316 core tube, i.e. 216JN1... replace the armature tube code with R452713

21WA - W - 21X SERIES



2/2 NC

GROUP	VALVE CODE	SEALING	PLUNGER S/A	ARMATURE TUBE	DIAPHR.	O-RING		KIT	KIT COMP.	REPAIR KIT	KIT COMP.
						I	II				
21WA3	21WA3ROB130	NBR	R453740/B	R452062	R452186/B	R990597/G	R990300/B	KT100ROB25-FJ	I + II + IV	KTGWA3ROB13	I + III + V
	21WA3ROV130	FKM	R453740/V	R452062	R452186/V	R990597/V	R990300/V	KT100ROV25-FJ	I + II + IV	KTGWA3ROV13	I + III + V
	21WA3ROE130	EPDM	R453740/E	R452062	R452186/E	R990597/E	R990300/E	KT100ROE25-FJ	I + II + IV	KTGWA3ROE13	I + III + V
	21WA3KOB130	NBR	R450898/B	R450606	R452186/B	-	R990300/B	KT130KB55-A	I + II	KTGWA3KOB13	I + III + V
	21WA3KOV130	FKM	R450898/V	R450606	R452186/V	-	R990300/V	KT130KV55-A	I + II	KTGWA3KOV13	I + III + V
21WA4	21WA4ROB130	NBR	R453740/B	R452062	R452186/B	R990597/G	R990300/B	KT100ROB25-FJ	I + II + IV	KTGWA3ROB13	I + III + V
	21WA4ROV130	FKM	R453740/V	R452062	R452186/V	R990597/V	R990300/V	KT100ROV25-FJ	I + II + IV	KTGWA3ROV13	I + III + V
	21WA4ROE130	EPDM	R453740/E	R452062	R452186/E	R990597/E	R990300/E	KT100ROE25-FJ	I + II + IV	KTGWA3ROE13	I + III + V
	21WA4KOB130	NBR	R450898/B	R450606	R452186/B	-	R990300/B	KT130KB55-A	I + II	KTGWA3KOB13	I + III + V
	21WA4KOV130	FKM	R450898/V	R450606	R452186/V	-	R990300/V	KT130KV55-A	I + II	KTGWA3KOV13	I + III + V
21W3	21W3RB190	NBR	R450747/G	R450726	R450431/B	R990000/G	R990002/G	KT100RB25-FC	I + II + IV	-	-
	21W3RV190	FKM	R450747/V	R450726	R450431/V	R990000/V	R990002/V	KT100RV25-FC	I + II + IV	-	-
	21W3RE190	EPDM	R450747/E	R450726	R450431/E	R990000/E	R990002/E	KT100RE25-FC	I + II + IV	-	-
	21W3KB190	NBR	R450898/B	R450606	R450431/B	-	R990002/B	KT130KB55-A	I + II	KTGOW3KB19	I + III + V
	21W3KV190	FKM	R450898/V	R450606	R450431/V	-	R990002/V	KT130KV55-A	I + II	KTGOW3KV19	I + III + V
21W4	21W4RB250	NBR	R450747/G	R450726	R450431/B	R990000/G	R990002/G	KT100RB25-FC	I + II + IV	-	-
	21W4RV250	FKM	R450747/V	R450726	R450431/V	R990000/V	R990002/V	KT100RV25-FC	I + II + IV	-	-
	21W4RE250	EPDM	R450747/E	R450726	R450431/E	R990000/E	R990002/E	KT100RE25-FC	I + II + IV	-	-
	21W4KB250	NBR	R450898/B	R450606	R450431/B	-	R990002/B	KT130KB55-A	I + II	KTGOW3KB19	I + III + V
	21W4KV250	FKM	R450898/V	R450606	R450431/V	-	R990002/V	KT130KV55-A	I + II	KTGOW3KV19	I + III + V
21W5	21W5KB350	NBR	R450898/B	R450606	R450466/B	-	R990005/B	KT130KB55-A	I + II	KTGOW5KB35	I + III + V
	21W5KV350	FKM	R450898/V	R450606	R450466/V	-	R990005/V	KT130KV55-A	I + II	KTGOW5KV35	I + III + V
	21W5KE350	EPDM	R450898/E	R450606	R450466/E	-	R990005/E	KT130KE55-A	I + II	KTGOW5KE35	I + III + V
	21W6KB400	NBR	R450898/B	R450606	R450466/B	-	R990005/B	KT130KB55-A	I + II	KTGOW5KB35	I + III + V
	21W6KV400	FKM	R450898/V	R450606	R450466/V	-	R990005/V	KT130KV55-A	I + II	KTGOW5KV35	I + III + V
21W7	21W7KE400	EPDM	R450898/E	R450606	R450466/E	-	R990005/E	KT130KE55-A	I + II	KTGOW5KE35	I + III + V
	21W7KB500	NBR	R450898/B	R450606	R450432/B	-	R990008/B	KT130KB55-A	I + II	KTGOW7KB50	I + III + V
	21W7KV500	FKM	R450898/V	R450606	R450432/V	-	R990008/V	KT130KV55-A	I + II	KTGOW7KV50	I + III + V
	21W7KE500	EPDM	R450898/E	R450606	R450432/E	-	R990008/E	KT130KE55-A	I + II	KTGOW7KE50	I + III + V

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GROUP	VALVE CODE	SEALING	PLUNGER S/A	ARMATURE TUBE	DIAPHR.	O-RING		KIT	KIT COMP.	REPAIR KIT	KIT COMP.
						I	II				
21X2	21X2KV120	FKM	R450898/V	R450811	R451816/V	R990000/V	R990003/V	KT130KV30-H	I + II + IV	KTGOW1KV12	I + III + V
	21X2KB120	NBR	R450898/B	R450811	R451816/B	R990000/G	R990003/B	KT130KB30-H	I + II + IV	KTGOW1KB12	I + III + V
	21X2KE120	EPDM	R450898/E	R450811	R451816/E	R990000/E	R990003/E	KT130KE30-H	I + II + IV	KTGOW1KE12	I + III + V
21X3	21X3KV190	FKM	R450898/V	R450811	R450958/V	R990000/V	R990002/V	KT130KV30-H	I + II + IV	KTGOW3KV19	I + III + V
	21X3KB190	NBR	R450898/B	R450811	R450958/B	R990000/G	R990002/B	KT130KB30-H	I + II + IV	KTGOW3KB19	I + III + V
	21X3KE190	EPDM	R450898/E	R450811	R450958/E	R990000/E	R990002/E	KT130KE30-H	I + II + IV	KTGOW3KE19	I + III + V
21X4	21X4KV250	FKM	R450898/V	R450811	R450958/V	R990000/V	R990002/V	KT130KV30-H	I + II + IV	KTGOW3KV19	I + III + V
	21X4KB250	NBR	R450898/B	R450811	R450958/B	R990000/G	R990002/B	KT130KB30-H	I + II + IV	KTGOW3KB19	I + III + V
	21X4KE250	EPDM	R450898/E	R450811	R450958/E	R990000/E	R990002/E	KT130KE30-H	I + II + IV	KTGOW3KE19	I + III + V

2/2 NC

GROUP	VALVE CODE	SEALING	PLUNGER S/A	ARMATURE TUBE	DIAPHR.	O-RING 1	NOZZLE	KIT	KIT COMP.	REPAIR KIT	KIT COMP.
21W8	21W8KB650	NBR	R453494/B	R453502	R453503/B	R990000/G	R453535/**	KT130KB30-FC	I + II + IV	KTGOW8KB65	I + III
	21W8KB650-HP	NBR	R453494/B	R453503	R453509/B	R990000/G	R453535/**	KT130KB30-FC	I + II + IV	KTGOW8KB65-HP	I + III
21W9	21W9KB750	NBR	R453494/B	R453504	R453503/B	R990000/G	R453535/**	KT130KB30-FC	I + II + IV	KTGOW8KB65	I + III
	21W9KB750-HP	NBR	R453494/B	R453505	R453509/B	R990000/G	R453535/**	KT130KB30-FC	I + II + IV	KTGOW8KB65-HP	I + III

** To be replaced with nozzle size: 08 for 0.8 mm, 12 for 1.2 mm and 15 for 1.5 mm

2/2 NC HIGH FLOW RATE

GROUP	VALVE CODE	SEALING	PLUNGER	ARMATURE TUBE	DIAPHR.	O-RING 1	O-RING 2	SEALING RING	KIT	KIT COMP.	REPAIR KIT	KIT COMP.
21X	21X2KT120	PTFE	R451234/T	R450811	R450950	R990000/T	R450858	R450859	KT130KT30-H	I + II + IV	KTGOW1KT12	I + III + V + VI
	21X3KT190	PTFE	R451234/T	R450811	R450954	R990000/T	R450894	R450895	KT130KT30-H	I + II + IV	KTGOW3KT19	I + III + V + VI
	21X4KT250	PTFE	R451234/T	R450811	R450954	R990000/T	R450894	R450895	KT130KT30-H	I + II + IV	KTGOW3KT19	I + III + V + VI

2/2 NC FOR STEAM

GROUP	VALVE CODE	SEALING	PLUNGER	ARMATURE TUBE	DIAPHR.	O-RING 1	O-RING 2	KIT	KIT COMP.	REPAIR KIT	KIT COMP.
21WA	21WA3K1E130-T5	EPDM	R450886/EX1	R453482	R452186/EX1/P	R990000/EX1	R990300/EX1	KT130K1E30-F5	I + II + IV	KTGWA3K1E13-5	I + III + V
	21WA4K1E130-T5	EPDM	R450886/EX1	R453482	R452186/EX1/P	R990000/EX1	R990300/EX1	KT130K1E30-F5	I + II + IV	KTGWA4K1E13-5	I + III + V
21W3	21W3K1E190-T5	EPDM	R450886/EX1	R453482	R450431/EX1/P	R990000/EX1	R990002/EX1	KT130K1E30-F5	I + II + IV	KTGOW3K1E19-5	I + III + V
21W4	21W4K1E250-T5	EPDM	R450886/EX1	R453482	R450431/EX1/P	R990000/EX1	R990002/EX1	KT130K1E30-F5	I + II + IV	KTGOW4K1E19-5	I + III + V

2/2 NC VALVES FOR DRINKING WATER SYSTEMS

GROUP	VALVE CODE	SEALING	PLUNGER	ARMATURE TUBE	DIAPHR.	O-RING 1	O-RING 2	KIT	KIT COMP.	REPAIR KIT	KIT COMP.
21WA	21WA3Z1E130-T5	EPDM	R450788/EX1	R450573/D	R452186/EX1/P	R990000/EX1	R990300/EX1	-	-	-	-
	21WA4Z1E130-T5	EPDM	R450788/EX1	R450573/D	R452186/EX1/P	R990000/EX1	R990300/EX1	-	-	-	-
21W3	21W3Z1E190-T5	EPDM	R450788/EX1	R450573/D	R450431/EX1/P	R990000/EX1	R990002/EX1	-	-	-	-
21W4	21W4Z1E250-T5	EPDM	R450788/EX1	R450573/D	R450431/EX1/P	R990000/EX1	R990002/EX1	-	-	-	-

2/2 NC VALVES FOR DRINKING WATER SYSTEMS

2/2 NO

GROUP	VALVE CODE	SEALING	PLUNGER	ARMATURE TUBE	I	II	III	IV	V	KIT	KIT COMP.	REPAIR KIT	KIT COMP.
					O-RING 1	O-RING 2							
21WA3	21WA310B130	NBR	R452964/B	R452959	R452186/B	R990597/G	R990300/B	KT10010B25-F	I + II + IV	-	-	-	-
	21WA310V130	FKM	R452964/V	R452959	R452186/V	R990597/V	R990300/V	KT10010V25-F	I + II + IV	-	-	-	-
	21WA310E130	EPDM	R452964/E	R452959	R452186/E	R990597/E	R990300/E	KT10010E25-F	I + II + IV	-	-	-	-
	21WA320B130	NBR	R450788/G	R450573	R452186/B	R990000/G	R990300/B	KT130ZB30-F	I + II + IV	KTGWA3Z0B13	I + III + V	-	-
	21WA320V130	FKM	R450788/V	R450573	R452186/V	R990000/V	R990300/V	KT130ZV30-F	I + II + IV	KTGWA3Z0V13	I + III + V	-	-
	21WA320E130	EPDM	R450788/E	R450573	R452186/E	R990000/E	R990300/E	KT130ZE30-F	I + II + IV	KTGWA3Z0E13	I + III + V	-	-
21WA4	21WA410B130	NBR	R452964/B	R452959	R452186/B	R990597/G	R990300/B	KT10010B25-F	I + II + IV	-	-	-	-
	21WA410V130	FKM	R452964/V	R452959	R452186/V	R990597/V	R990300/V	KT10010V25-F	I + II + IV	-	-	-	-
	21WA410E130	EPDM	R452964/E	R452959	R452186/E	R990597/E	R990300/E	KT10010E25-F	I + II + IV	-	-	-	-
	21WA420B130	NBR	R450788/G	R450573	R452186/B	R990000/G	R990300/B	KT130ZB30-F	I + II + IV	KTGWA3Z0B13	I + III + V	-	-
	21WA420V130	FKM	R450788/V	R450573	R452186/V	R990000/V	R990300/V	KT130ZV30-F	I + II + IV	KTGWA3Z0V13	I + III + V	-	-
	21WA420E130	EPDM	R450788/E	R450573	R452186/E	R990000/E	R990300/E	KT130ZE30-F	I + II + IV	KTGWA3Z0E13	I + III + V	-	-
21W3	21W3ZB190	NBR	R450788/G	R450573	R450431/B	-	R990002/B	KT130ZB30-F	I + II + IV	KTGOW3ZB19	I + III + V	-	-
	21W3ZV190	FKM	R450788/V	R450573	R450431/V	-	R990002/V	KT130ZV30-F	I + II + IV	KTGOW3ZV19	I + III + V	-	-
	21W3ZE190	EPDM	R450788/E	R450573	R450431/E	-	R990002/E	KT130ZE30-F	I + II + IV	KTGOW3ZE19	I + III + V	-	-
21W4	21W4ZB250	NBR	R450788/G	R450573	R450431/B	-	R990002/B	KT130ZB30-F	I + II + IV	KTGOW3ZB19	I + III + V	-	-
	21W4ZV250	FKM	R450788/V	R450573	R450431/V	-	R990002/V	KT130ZV30-F	I + II + IV	KTGOW3ZV19	I + III + V	-	-
21W5	21W4ZE250	EPDM	R450788/E	R450573	R450431/E	-	R990002/E	KT130ZE30-F	I + II + IV	KTGOW3ZE19	I + III + V	-	-
	21W5ZB350	NBR	R450788/G	R450573	R450431/B	-	R990005/B	KT130ZB30-F	I + II + IV	KTGOW5ZB35	I + III + V	-	-
	21W5ZV350	FKM	R450788/V	R450573	R450431/V	-	R990005/V	KT130ZV30-F	I + II + IV	KTGOW5ZV35	I + III + V	-	-
21W6	21W5ZE350	EPDM	R450788/E	R450573	R450431/E	-	R990005/E	KT130ZE30-F	I + II + IV	KTGOW5ZE35	I + III + V	-	-
	21W6ZB400	NBR	R450788/G	R450573	R450466/B	-	R990005/B	KT130ZB30-F	I + II + IV	KTGOW5ZB35	I + III + V	-	-
	21W6ZV400	FKM	R450788/V	R450573	R450466/V	-	R990005/V	KT130ZV30-F	I + II + IV	KTGOW5ZV35	I + III + V	-	-
21W7	21W6ZE400	EPDM	R450788/E	R450573	R450466/E	-	R990005/E	KT130ZE30-F	I + II + IV	KTGOW5ZE35	I + III + V	-	-
	21W7ZB500	NBR	R450788/G	R450573	R450432/B	-	R990081/B	KT130ZB30-F	I + II + IV	KTGOW7ZB50	I + III + V	-	-
	21W7ZV500	FKM	R450788/V	R450573	R450432/V	-	R990081/V	KT130ZV30-F	I + II + IV	KTGOW7ZV50	I + III + V	-	-
21X2	21W7ZE500	EPDM	R450788/E	R450573	R450432/E	-	R990081/E	KT130ZE30-F	I + II + IV	KTGOW7ZE50	I + III + V	-	-
	21X2Z1V120D	FKM	R450788/V	R450573/D	R451816/V	R990000/V	R990003/V	KT130ZV30-H	I + II + IV	-	-	-	-
	21X2Z1B120D	NBR	R450788/G	R450573/D	R451816/B	R990000/G	R990003/B	KT130ZB30-F	I + II + IV	-	-	-	-
21X3	21X2Z1E120D	EPDM	R450788/E	R450573/D	R451816/E	R990000/E	R990003/E	KT130ZE30-F	I + II + IV	-	-	-	-
	21X3Z1V190D	FKM	R450788/V	R450573/D	R450958/V	R990000/V	R990002/V	KT130ZV30-H	I + II + IV	-	-	-	-
	21X3Z1B190D	NBR	R450788/G	R450573/D	R450958/B	R990000/G	R990002/B	KT130ZB30-F	I + II + IV	-	-	-	-
21X4	21X3Z1E190D	EPDM	R450788/E	R450573/D	R450958/E	R990000/E	R990002/E	KT130ZE30-F	I + II + IV	-	-	-	-
	21X4Z1V250D	FKM	R450788/V	R450573/D	R450958/V	R990000/V	R990002/V	KT130ZV30-H	I + II + IV	-	-	-	-
	21X4Z1B250D	NBR	R450788/G	R450573/D	R450958/B	R990000/G	R990002/B	KT130ZB30-F	I + II + IV	-	-	-	-
	21X4Z1E250D	EPDM	R450788/E	R450573/D	R450958/E	R990000/E	R990002/E	KT130ZE30-F	I + II + IV	-	-	-	-

2/2 NC WITH PROGRESSIVE CLOSING

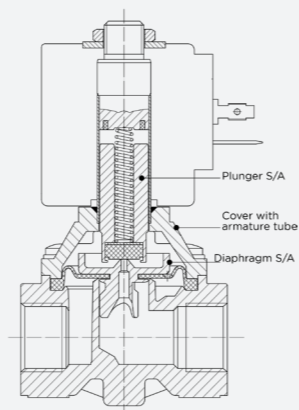
GROUP	VALVE CODE	SEALING	PLUNGER	ARMATURE TUBE	DIAPHR.	I	II	III	IV	V	KIT	KIT COMP.	REPAIR KIT	KIT COMP.
						O-RING 1	O-RING 2							
21WA3	21WA3KOB130-PC	NBR	R450898/B	R450606	R452401/B	-	R990300/B	KT130KB55-A	I + II	KTGWA3KOB13-PC	I + III + V	-	-	
	21WA3KOV130-PC	FKM	R450898/V	R450606	R452401/V	-	R990300/V	KT130KV55-A	I + II	KTGWA3KOV13-PC	I + III + V	-	-	
	21WA3KOE130-PC	EPDM	R450898/E	R450606	R452401/E	-	R990300/E	KT130KE55-A	I + II	KTGWA3KOE13-PC	I + III + V	-	-	
21WA4	21WA4KOB130-PC	NBR	R450898/B	R450606	R452401/B	-	R990300/B	KT130KB55-A	I + II	KTGWA3KOB13-PC	I + III + V	-	-	
	21WA4KOV130-PC	FKM	R450898/V	R450606	R452401/V	-	R990300/V	KT130KV55-A	I + II	KTGWA3KOV13-PC	I + III + V	-	-	
21W3	21WA4KOE130-PC	EPDM	R450898/E	R450606	R452401/E	-	R990300/E	KT130KE55-A	I + II	KTGWA3KOE13-PC	I + III + V	-	-	
	21W3KB190-PC	NBR	R450898/B	R450606	R451157/B	-	R990300/B	KT130KB55-A	I + II	-	-	-	-	
	21W3KV190-PC	FKM	R450898/V	R450606	R451157/V	-	R990300/V	KT130KV55-A	I + II	-	-	-	-	
21W4	21W3KE190-PC	EPDM	R450898/E	R450606	R451157/E	-	R990300/E	KT130KE55-A	I + II	-	-	-	-	
	21W4KB250-PC	NBR	R450898/B	R450606	R451157/B	-	R990300/B	KT130KB55-A	I + II	-	-	-	-	
	21W4KV250-PC	FKM	R450898/V	R450606	R451157/V	-	R990300/V	KT130KV55-A	I + II	-	-	-	-	
	21W4KE250-PC	EPDM	R450898/E	R450606	R451157/E	-	R990300/E	KT130KE55-A	I + II	-	-	-	-	

2/2 NC WITH CLOSING SPRING ON DIAPHRAGM

GROUP	VALVE CODE	SEALING	PLUNGER	ARMATURE TUBE	DIAPHR.	I	II	III	IV	V	KIT	KIT COMP.	REPAIR KIT	KIT COMP.
						O-RING 1	O-RING 2							
21WA3	21WA3ROB130-MM	NBR	R453740/B	R452062	R452726/B	R450788/G	R990300/B	KT100ROB25-FJ	I + II + IV	-	-	-	-	
	21WA3ROV130-MM	FKM	R453740/V	R452062	R452726/V	R990597/V	R990300/V	KT100ROV25-FJ	I + II + IV	-	-	-	-	
	21WA3ROE130-MM	EPDM	R453740/E	R452062	R452726/E	R990597/E	R990300/E	KT100ROE25-FJ	I + II + IV	-	-	-	-	
21WA4	21WA3KOB130-MM	NBR	R450898/B	R450606	R452726/B	-	R990300/B	KT130KB55-A	I + II	KTG-WA3KOB13-MM	I + III + V	-	-	
	21WA3KOV130-MM	FKM	R450898/V	R450606	R452726/V	-	R990300/V	KT130KV55-A	I + II	KTG-WA3KOV13-MM	I + III + V	-	-	
	21WA3KOE130-MM	EPDM	R450898/E	R450606	R452726/E	-	R990300/E	KT130KE55-A	I + II	KTG-WA3KOE13-MM	I + III + V	-	-	
21WA4	21WA4ROB130-MM	NBR	R453740/B	R452062	R452726/B	R450788/G	R990300/B	KT100ROB25-FJ	I + II + IV	-	-	-	-	
	21WA4ROV130-MM	FKM	R453740/V	R452062	R452726/V	R990597/V	R990300/V	KT100ROV25-FJ	I + II + IV	-	-	-	-	
	21WA4ROE130-MM	EPDM	R453740/E	R452062	R452726/E	R990597/E	R990300/E	KT100ROE25-FJ	I + II + IV	-	-	-	-	
21WA4	21WA4KOB130-MM	NBR	R450898/B	R450606	R452726/B	-	R990300/B	KT130KB55-A	I + II	KTG-WA3KOB13-MM	I + III + V	-	-	
	21WA4KOV130-MM	FKM	R450898/V	R450606	R452726/V	-	R990300/V	KT130KV55-A	I + II	KTG-WA3KOV13-MM	I + III + V	-	-	
	21WA4KOE130-MM	EPDM	R450898/E	R450606	R452726/E	-	R990300/E	KT130KE55-A	I + II	KTG-WA3KOE13-MM	I + III + V	-	-	

- OX Replacement of internal parts is not possible for valves used in industrial oxygen service
- N Add /N before the sealing letter on the correspondent diaphragm subassembly code, i.e. R452186/N/B
- M Add R451772/* for manual operator screw. Please replace digit * with the same sealing of the valve, i.e. V
- MR Add R451772/* for manual operator screw and R450728/* for closing speed screw. Please replace digit * with the same sealing of the valve, i.e. V
- PC Refer to the following tables
- MM Refer to the following tables
- 216W For valves with AISI 316 core tube, i.e. 216WA3..., replace the armature tube code with R453199 and add O-RING R990000/*

21H SERIES



2/2 NC

GROUP	VALVE CODE	SEALING	I				IV	
			PLUNGER	COVER WITH ARMATURE TUBE	DIAPHR.	O-RING 1	KIT	KIT COMP.
21H7	21H7KV120	FKM	R451284/V	R450938	R450916/V	-	KTG0H7KV12	I + III
	21H7KB120	NBR	R451284/B	R450938	R450916/B	-	KTG0H7KB12	I + III
	21H7KE120	EPDM	R451284/E	R450938	R450916/E	-	KTG0H7KE12	I + III
21H8	21H8KV120	FKM	R451284/V	R450938	R450916/V	-	KTG0H7KV12	I + III
	21H8KB120	NBR	R451284/B	R450938	R450916/B	-	KTG0H7KB12	I + III
	21H8KE120	EPDM	R451284/E	R450938	R450916/E	-	KTG0H7KE12	I + III
21H9	21H9KV180	FKM	R451284/V	R452291	R451220/V	R990105/V	KTG0H9KV18	I + III + IV
	21H9KB180	NBR	R451284/B	R452291	R451220/B	R990105/B	KTG0H9KB18	I + III + IV
	21H9KE180	EPDM	R451284/E	R452291	R451220/E	R990105/E	KTG0H9KE18	I + III + IV

- OX Replacement of internal parts is not possible for valves used in industrial oxygen service
- PC Refer to the following tables

I II III IV

GROUP	VALVE CODE	SEALING	PLUNGER	ARMATURE TUBE	DIAPHR.	O-RING 1	KIT	KIT COMP.
21H7	21H7KV120-PC	FKM	R451284/V	R450603	R451479/V	R990000/V	-	-
	21H7KB120-PC	NBR	R451284/B	R450603	R451479/B	R990000/B	-	-
	21H7KE120-PC	EPDM	R451284/E	R450603	R451479/E	R990000/E	-	-
21H8	21H8KV120-PC	FKM	R451284/V	R450603	R451479/V	R990000/V	-	-
	21H8KB120-PC	NBR	R451284/B	R450603	R451479/B	R990000/B	-	-
	21H8KE120-PC	EPDM	R451284/E	R450603	R451479/E	R990000/E	-	-

2/2 NC WITH PC

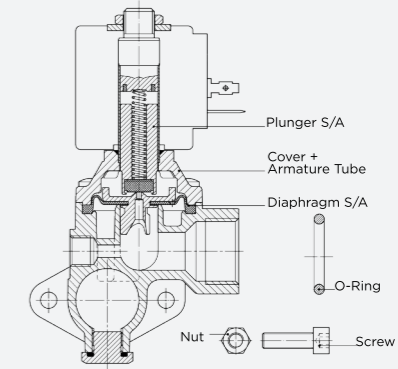
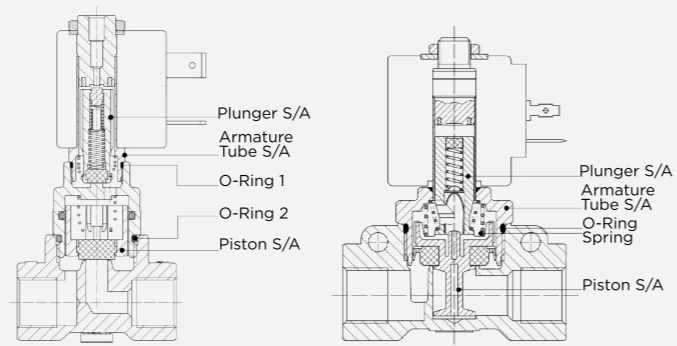
I II III IV

GROUP	VALVE CODE	SEALING	PLUNGER	COVER WITH ARMATURE TUBE	DIAPHR.	O-RING 1	KIT	KIT COMP.
21H9	21H9KV180-PC	FKM	R451284/V	R452291	R451945/V	R990105/V	-	-
	21H9KB180-PC	NBR	R451284/B	R452291	R451945/B	R990105/B	-	-
	21H9KE180-PC	EPDM	R451284/E	R452291	R451945/E	R990105/E	-	-

2/2 NC WITH PC

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21PW - 21A - PW SERIES



4743 SERIES

2/2 NC

GROUP	VALVE CODE	SEALING	PLUNGER	ARMATURE TUBE	PISTON	SPRING	O-RING
21PW3	21PW3KOV120	FKM	R450820/V	R452153	R452149/V	R452151	R990478/V
	21PW4KOT120	PTFE	R450820/V	R452153	R452230	R450783	R990478/V
21PW4	21PW4KOV120	FKM	R450820/V	R452153	R452149/V	R452151	R990478/V
	21PW4KOT120	PTFE	R450820/V	R452153	R452230	R450783	R990478/V

2/2 NO

GROUP	VALVE CODE	SEALING	I		II		III		IV		V	
			PLUNGER	ARMATURE TUBE	PISTON	O-RING 1	O-RING 2	KIT	KIT COMP.			
21A'-PW	21A2WOF55-PW	FKM	R452061/V	R452074	R452297/F	R990597/V	R990000/V	KT100W0V25-FJ	I + II + IV			
	21A2YOF55-PW	FKM	R452061/VX	R452143	R452297/F	R990597/V	R990000/V	-				

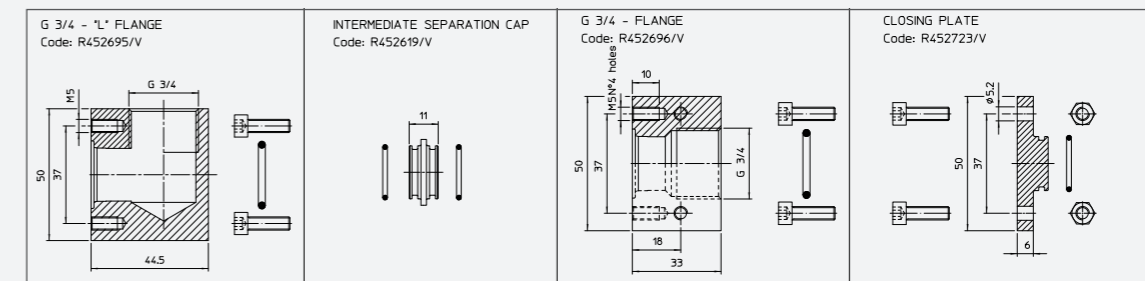
2/2 NO

GROUP	VALVE CODE	SEALING	PLUNGER	ARMATURE TUBE	PISTON	SPRING	O-RING
21PW3	21PW3FOV120	FKM	R450782/V	R452154	R452150/V	R452151	R990478/V
	21PW4FOT120	PTFE	R450782/V	R452154	R452231	R450783	R990478/V
21PW4	21PW4FOV120	FKM	R450782/V	R452154	R452150/V	R452151	R990478/V
	21PW4FOT120	PTFE	R450782/V	R452154	R452231	R450783	R990478/V

I II III IV V VI

GROUP	VALVE CODE	SEALING	PLUNGER	COVER + ARMATURE TUBE	DIAPHR.	O-RING	SCREW M5X16	NUT M5X4	KIT	KIT COMP.
4743	4743KOV120	FKM	R451284/V	R450938	R450916/V	R990146/V	R990455	R990468	KTG0H7KV12	I + III

2/2 NC

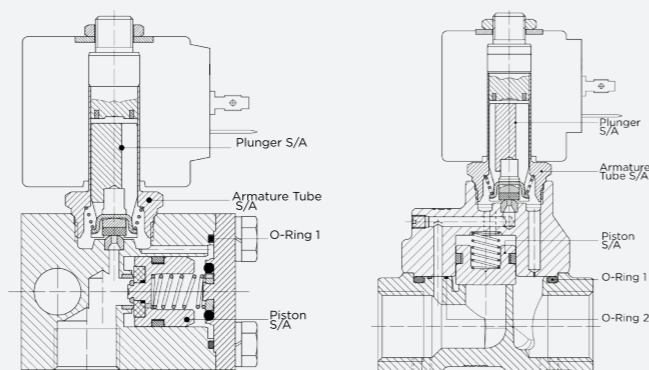


ACCESSORIES FOR MANIFOLD VERSION

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HIGH PRESSURE SERIES



2/2 NC

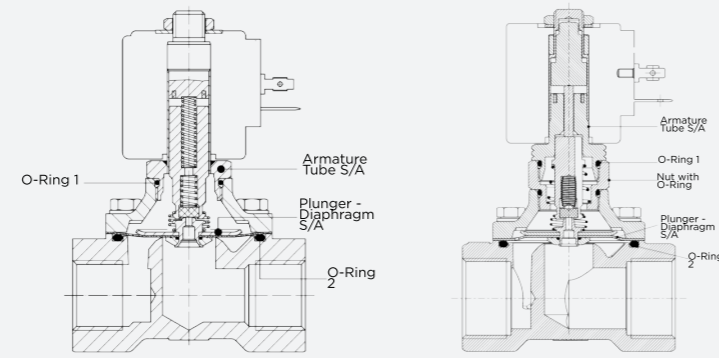
			I	II	III	IV	V				
GROUP	VALVE CODE	SEALING	PLUNGER	ARMATURE TUBE	PISTON	O-RING 1	O-RING 2	KIT	KIT COMP.	REPAIR KIT	KIT COMP.
4731	4731KOT70	PTFE	R450897	R450606	R452737	R990435/V	-	KT130KT30-AP	I + II	KTP4731KOT7	I+III+IV
4966	4966KOQ120	PTFE	R450897	R450606	R452744	R992130/B	R990382/B	KT130KT30-AP	I + II	KTP4966KOQ12	I+III+IV+V

2/2 NO

			I	II	III	IV	V	VI				
GROUP	VALVE CODE	SEALING	PLUNGER	ARMATURE TUBE	PISTON	O-RING 1	O-RING 2	ARM. TUBE O-RING	KIT	KIT COMP.	REPAIR KIT	KIT COMP.
4966	4966ZOQ120D	PTFE	R450790	R450573	R452744	R992130/B	R990382/B	R990000/T	KT130ZT30-F	I+II+VI	KTP4966ZOQ12	I+III+IV+V

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21HT - HF - IH SERIES



2/2 NC

GROUP	VALVE CODE	SEALING	PLUNGER - DIAPHRAGM	ARMATURE TUBE	O-RING 1	O-RING 2	KIT	KIT COMP.
21HT3	21HT3KOY110	NBR	R452126/B	R450603	R990000/G	R990105/G	KTGHT3KOY11	I + IV
	21HT3KOY110-S	NBR	R452126/B	R450603	R990000/G	R990105/G	KTGHT3KOY11	I + IV
	21HT3KOV110	FKM	R452126/V	R450603	R990000/V	R990105/V	KTGHT3KOV11	I + IV
	21HT3KOV110-S	FKM	R452126/V	R450603	R990000/V	R990105/V	KTGHT3KOV11	I + IV
21HT4	21HT4KOY160	NBR	R452125/B	R450603	R990000/G	R990105/G	KTGHT4KOY16	I + IV
	21HT4KOY160-S	NBR	R452125/B	R450603	R990000/G	R990105/G	KTGHT4KOY16	I + IV
	21HT4KOV160	FKM	R452125/V	R450603	R990000/V	R990105/V	KTGHT4KOV16	I + IV
	21HT4KOV160-S	FKM	R452125/V	R450603	R990000/V	R990105/V	KTGHT4KOV16	I + IV
21HT5	21HT5KOY160	NBR	R452125/B	R450603	R990000/G	R990105/G	KTGHT4KOY16	I + IV
	21HT5KOY160-S	NBR	R452125/B	R450603	R990000/G	R990105/G	KTGHT4KOY16	I + IV
	21HT5KOV160	FKM	R452125/V	R450603	R990000/V	R990105/V	KTGHT4KOV16	I + IV
	21HT5KOV160-S	FKM	R452125/V	R450603	R990000/V	R990105/V	KTGHT4KOV16	I + IV
21HT6	21HT6KOY250	NBR	KTGHT6KOY25	R450603	R990000/G	-	KTGHT6KOY25	I
	21HT6KOY250-S	NBR	KTGHT6KOY25	R450603	R990000/G	-	KTGHT6KOY25	I
	21HT6KOV250	FKM	KTGHT6KOV25	R450603	R990000/V	-	KTGHT6KOV25	I
	21HT6KOV250-S	FKM	KTGHT6KOV25	R450603	R990000/V	-	KTGHT6KOV25	I
21HF7	21HF7KOB350	NBR	R452395/B	R450603	R990000/G	R992061/B	KTGHF7KOB35	I + IV
	21HF7KOV350	FKM	R452395/V	R450603	R990000/V	R992061/V	KTGHF7KOV35	I + IV
	21HF7KOE350	EPDM	R452395/E	R450603	R990000/E	R992061/E	KTGHF7KOE35	I + IV
21HF8	21HF8KOB400	NBR	R452395/B	R450603	R990000/G	R992061/B	KTGHF7KOB35	I + IV
	21HF8KOV400	FKM	R452395/V	R450603	R990000/V	R992061/V	KTGHF7KOV35	I + IV
	21HF8KOE400	EPDM	R452395/E	R450603	R990000/E	R992061/E	KTGHF7KOE35	I + IV
21IH3	21IH3K1V150	FKM	R452894/V	R450811	R990000/V	R990105/V	KTGIH3K1V15	I + IV
21IH4	21IH4K1V160	FKM	R452894/V	R450811	R990000/V	R990105/V	KTGIH3K1V15	I + IV
21IH5	21IH5K1V200	FKM	R452899/V	R450811	R990000/V	R992103/V	KTGIH5K1V20	I + IV
21IH6	21IH6K1V250	FKM	R452846/V	R450811	R990000/V	R992109/V	KTGIH6K1V25	I + IV
21IH7	21IH7K1V350	FKM	R452904/V	R450811	R990000/V	R992101/V	KTGIH7K1V35	I + IV
	21IH7K1V350-S	FKM	R453598/V	R450811	R990000/V	R992101/V	-	I + IV
21IH8	21IH8K1V400	FKM	R452904/V	R450811	R990000/V	R992101/V	KTGIH7K1V35	I + IV
	21IH8K1V400-S	FKM	R453598/V	R450811	R990000/V	R992101/V	-	I + IV

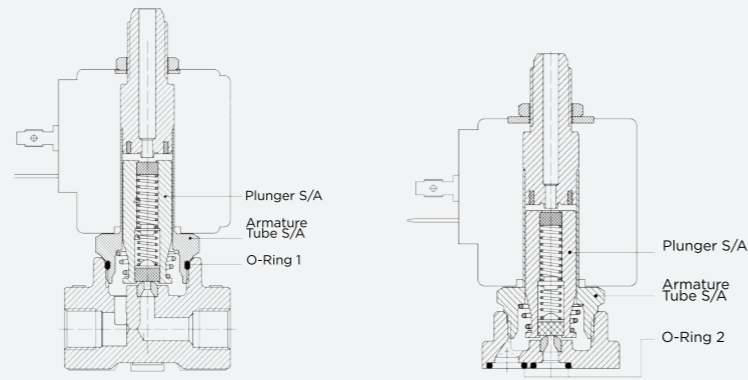
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GROUP	VALVE CODE	SEALING	PLUNGER - DIAPHRAGM	ARMATURE TUBE	NUT WITH O-RING	O-RING 1	O-RING 2	KIT	KIT COMP.
21HT3	21HT3ZOY110	NBR	R452862/B	R453459	R452863/B	R990000/G	R990105/G	KTGHT3ZOY11	I + V
	21HT3ZOV110	FKM	R452862/V	R453459	R452863/V	R990000/V	R990105/V	KTGHT3ZOV11	I + V
21HT4	21HT4ZOY160	NBR	R452879/B	R453459	R452863/B	R990000/G	R990105/G	KTGHT4ZOY16	I + V
	21HT4ZOV160	FKM	R452879/V	R453459	R452863/V	R990000/V	R990105/V	KTGHT4ZOV16	I + V
21HT5	21HT5ZOY160	NBR	R452879/B	R453459	R452863/B	R990000/G	R990105/G	KTGHT4ZOY16	I + V
	21HT5ZOV160	FKM	R452879/V	R453459	R452863/V	R990000/V	R990105/V	KTGHT4ZOV16	I + V
21IH3	21IH3Z1V150	FKM	R453317/V	R453459/D	R453321/V	R990000/V	R990105/V	KTGIH3Z1V15	I + V
21IH4	21IH4Z1V160	FKM	R453317/V	R453459/D	R453321/V	R990000/V	R990105/V	KTGIH3Z1V15	I + V
21IH5	21IH5Z1V200	FKM	R453320/V	R453459/D	R453321/V	R990000/V	R992103/V	KTGIH5Z1V20	I + V

2/2 NO

- OX Replacement of internal parts is not possible for valves used in industrial oxygen service
- 216HT For valves with AISI 316 core tube, i.e. 216HT4..., replace the armature tube code with R453199

31A - 31L - 31ALB SERIES



3/2 NC

GROUP	VALVE CODE	SEALING MATERIAL	I II III IV				KIT	KIT COMP.
			PLUNGER	ARMATURE TUBE	O-RING 1	O-RING 2		
31A3	31A3AV10	FKM	R450675/V	R450944	-	-	KT130AV30-A	I + II
	31A3AB10	NBR	R450675/B	R450944	-	-	KT130AB30-A	I + II
	31A3AR10	RUBY	R450873	R450944/AL	-	-	KT130AR30-A	I + II
	31A3AV15	FKM	R450675/V	R450944	-	-	KT130AV30-A	I + II
	31A3AB15	NBR	R450675/B	R450944	-	-	KT130AB30-A	I + II
	31A3AR15	RUBY	R450873	R450944/AL	-	-	KT130AR30-A	I + II
	31A3AV20	FKM	R450675/V	R450944	-	-	KT130AV30-A	I + II
	31A3AB20	NBR	R450675/B	R450944	-	-	KT130AB30-A	I + II
	31A3AR20	RUBY	R450873	R450944/AL	-	-	KT130AR30-A	I + II
	31A3AV25	FKM	R450675/V	R450944	-	-	KT130AV30-A	I + II
	31A3AB25	NBR	R450675/B	R450944	-	-	KT130AB30-A	I + II
	31A3AR25	RUBY	R450873	R450944/AL	-	-	KT130AR30-A	I + II
	31A3AV30	FKM	R450675/V	R450944	-	-	KT130AV30-A	I + II
	31A3AB30	NBR	R450675/B	R450944	-	-	KT130AB30-A	I + II
	31A3AR30	RUBY	R450873	R450944/AL	-	-	KT130AR30-A	I + II
31A2	31A2AV10	FKM	R450675/V	R450944	-	-	KT130AV30-A	I + II
	31A2AB10	NBR	R450675/B	R450944	-	-	KT130AB30-A	I + II
	31A2AR10	RUBY	R450873	R450944/AL	-	-	KT130AR30-A	I + II
	31A2AV15	FKM	R450675/V	R450944	-	-	KT130AV30-A	I + II
	31A2AB15	NBR	R450675/B	R450944	-	-	KT130AB30-A	I + II
	31A2AR15	RUBY	R450873	R450944/AL	-	-	KT130AR30-A	I + II
	31A2AV20	FKM	R450675/V	R450944	-	-	KT130AV30-A	I + II
	31A2AB20	NBR	R450675/B	R450944	-	-	KT130AB30-A	I + II
	31A2AR20	RUBY	R450873	R450944/AL	-	-	KT130AR30-A	I + II
	31A2AV25	FKM	R450675/V	R450944	-	-	KT130AV30-A	I + II
	31A2AB25	NBR	R450675/B	R450944	-	-	KT130AB30-A	I + II
	31A2AR25	RUBY	R450873	R450944/AL	-	-	KT130AR30-A	I + II
	31A2AV30	FKM	R450675/V	R450944	-	-	KT130AV30-A	I + II
	31A2AB30	NBR	R450675/B	R450944	-	-	KT130AB30-A	I + II
	31A2AR30	RUBY	R450873	R450944/AL	-	-	KT130AR30-A	I + II

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3/2 NC

GROUP	VALVE CODE	SEALING MATERIAL	I II III IV				KIT	KIT COMP.
			PLUNGER	ARMATURE TUBE	O-RING 1	O-RING 2		
31A1	31A1AV10	FKM	R450675/V	R450944	-	R990002/S	KT130AV30-A	I + II
	31A1AB10	NBR	R450675/B	R450944	-	R990002/S	KT130AB30-A	I + II
	31A1AR10	RUBY	R450873	R450944/AL	-	R990002/S	KT130AR30-A	I + II
	31A1AV15	FKM	R450675/V	R450944	-	R990002/S	KT130AV30-A	I + II
	31A1AB15	NBR	R450675/B	R450944	-	R990002/S	KT130AB30-A	I + II
	31A1AR15	RUBY	R450873	R450944/AL	-	R990002/S	KT130AR30-A	I + II
	31A1AV20	FKM	R450675/V	R450944	-	R990002/S	KT130AV30-A	I + II
	31A1AB20	NBR	R450675/B	R450944	-	R990002/S	KT130AB30-A	I + II
	31A1AR20	RUBY	R450873	R450944/AL	-	R990002/S	KT130AR30-A	I + II
	31A1AV25	FKM	R450675/V	R450944	-	R990002/S	KT130AV30-A	I + II
	31A1AB25	NBR	R450675/B	R450944	-	R990002/S	KT130AB30-A	I + II
	31A1AR25	RUBY	R450873	R450944/AL	-	R990002/S	KT130AR30-A	I + II
	31A1AV30	FKM	R450675/V	R450944	-	R990002/S	KT130AV30-A	I + II
	31A1AB30	NBR	R450675/B	R450944	-	R990002/S	KT130AB30-A	I + II
	31A1AR30	RUBY	R450873	R450944/AL	-	R990002/S	KT130AR30-A	I + II
31L1	31L1AV15	FKM	R450865/VX	R450864/D	R990000/V	R990002/V	KT130A1V30-H	I + II + III
	31L1AV20	FKM	R450865/VX	R450864/D	R990000/V	R990002/V	KT130A1V30-H	I + II + III
	31L1AV25	FKM	R450865/VX	R450864/D	R990000/V	R990002/V	KT130A1V30-H	I + II + III
	31L1AV30	FKM	R450865/VX	R450864/D	R990000/V	R990002/V	KT130A1V30-H	I + II + III
	31L2AV15	FKM	R450865/VX	R450864/D	R990000/V	R990002/V	KT130A1V30-H	I + II + III
31L2	31L2AV20	FKM	R450865/VX	R450864/D	R990000/V	R990002/V	KT130A1V30-H	I + II + III
	31L2AV25	FKM	R450865/VX	R450864/D	R990000/V	R990002/V	KT130A1V30-H	I + II + III
	31L2AV30	FKM	R450865/VX	R450864/D	R990000/V	R990002/V	KT130A1V30-H	I + II + III
31ALB	31ALBA1V15	FKM	R450865/VX	R450864/D	R990000/V	R990002/V	KT130A1V30-H	I + II + III
	31ALBA1V20	FKM	R450865/VX	R450864/D	R990000/V	R990002/V	KT130A1V30-H	I + II + III
	31ALBA1V25	FKM	R450865/VX	R450864/D	R990000/V	R990002/V	KT130A1V30-H	I + II + III
31ALBA1V30	FKM	R450865/VX	R450864/D	R990000/V	R990002/V	KT130A1V30-H	I + II + III	

3/2 NO

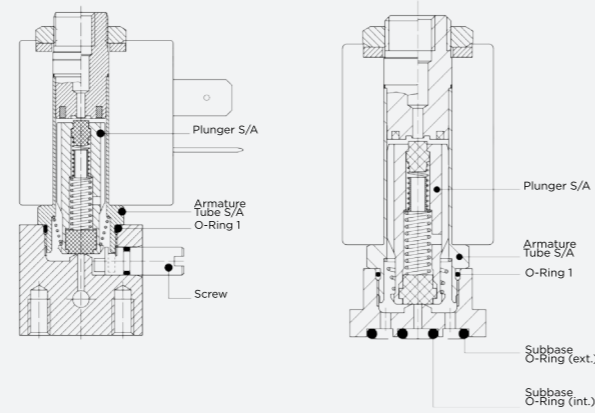
GROUP	VALVE CODE	SEALING MATERIAL	I II III IV				KIT	KIT COMP.
			PLUNGER	ARMATURE TUBE	O-RING 1	O-RING 2		
31A3	31A3FV15-Z	FKM	R452882/VX	R450664	-	-	KT130FV30-AZ	I + II
	31A3FB15-Z	NBR	R452882/B	R450664	-	-	KT130FB30-AZ	I + II
	31A3FV20-Z	FKM	R452882/VX	R450664	-	-	KT130FV30-AZ	I + II
	31A3FB20-Z	NBR	R452882/B	R450664	-	-	KT130FB30-AZ	I + II
31A2	31A2FV15-Z	FKM	R452882/VX	R450664	-	-	KT130FV30-AZ	I + II
	31A2FB15-Z	NBR	R452882/B	R450664	-	-	KT130FB30-AZ	I + II
	31A2FV20-Z	FKM	R452882/VX	R450664	-	-	KT130FV30-AZ	I + II
31A2FB20-Z	NBR	R452882/B	R450664	-	-	KT130FB30-AZ	I + II	
31A1	31A1FV15-Z	FKM	R452882/VX	R450664	-	R990002/S	KT130FV30-AZ	I + II
	31A1FB15-Z	NBR	R452882/B	R450664	-	R990002/S	KT130FB30-AZ	I + II
	31A1FV20-Z	FKM	R452882/VX	R450664	-	R990002/S	KT130FV30-AZ	I + II
31A1FB20-Z	NBR	R452882/B	R450664	-	R990002/S	KT130FB30-AZ	I + II	

3/2 U

GROUP	VALVE CODE	SEALING MATERIAL			I	II	III	IV	KIT	KIT COMP.
			PLUNGER	ARMATURE TUBE	O-RING 1	O-RING 2				
31A3	31A3GV10-U	FKM	R450689/V	R450644	-	-	-	-	-	-
	31A3GB10-U	NBR	R450689/G	R450644	-	-	-	-	-	-
	31A3FV15-U	FKM	R450689/V	R450664	-	-	-	-	-	-
	31A3FB15-U	NBR	R450689/G	R450664	-	-	-	-	-	-
	31A3AV25-U	FKM	R450689/V	R450944	-	-	-	-	-	-
	31A3AB25-U	NBR	R450689/G	R450944	-	-	-	-	-	-
	31A3EV30-U	FKM	R451448/V	R450658	-	-	-	-	-	-
	31A3EB30-U	NBR	R451448/B	R450658	-	-	-	-	-	-
31A2	31A2GV10-U	FKM	R450689/V	R450644	-	-	-	-	-	-
	31A2GB10-U	NBR	R450689/G	R450644	-	-	-	-	-	-
	31A2FV15-U	FKM	R450689/V	R450664	-	-	-	-	-	-
	31A2FB15-U	NBR	R450689/G	R450664	-	-	-	-	-	-
	31A2AV25-U	FKM	R450689/V	R450944	-	-	-	-	-	-
	31A2AB25-U	NBR	R450689/G	R450944	-	-	-	-	-	-
	31A2EV30-U	FKM	R451448/V	R450658	-	-	-	-	-	-
	31A2EB30-U	NBR	R451448/B	R450658	-	-	-	-	-	-
31A1	31A1GV10-U	FKM	R450689/V	R450644	-	R990002/S	-	-	-	-
	31A1GB10-U	NBR	R450689/G	R450644	-	R990002/S	-	-	-	-
	31A1FV15-U	FKM	R450689/V	R450664	-	R990002/S	-	-	-	-
	31A1FB15-U	NBR	R450689/G	R450664	-	R990002/S	-	-	-	-
	31A1AV25-U	FKM	R450689/V	R450944	-	R990002/S	-	-	-	-
	31A1AB25-U	NBR	R450689/G	R450944	-	R990002/S	-	-	-	-
	31A1EV30-U	FKM	R451448/V	R450658	-	R990002/S	-	-	-	-
	31A1EB30-U	NBR	R451448/B	R450658	-	R990002/S	-	-	-	-
31L2	31L2G1V10-U	FKM	R451753/V	R453039/D	R990000/V	-	-	-	-	-
	31L2F1V15-U	FKM	R451753/V	R452371/D	R990000/V	-	-	-	-	-
	31L2A1V15-U	FKM	R451753/V	R450864/D	R990000/V	-	-	-	-	-

- **-OX** Replacement of internal parts is not possible for valves used in industrial oxygen service
- **-V** Replace column "PLUNGER S/A" with code R450982
- **-ORV** Replace column "O-RING 2" with code R990002/VV
- **-VORV** Replace column "PLUNGER S/A" with code R450982 and replace column "O-RING 2" with code R990002/VV
- **-M** Manual operator screw code is R450753/V for FKM sealing valves and R450753/B for NBR sealing valves
- **-316A** For valves with AISI 316 core tube, i.e. 316A2... replace the armature tube code with R453331

31JN - 31JL SERIES



3/2 NC M5 EXHAUST

GROUP	VALVE CODE	SEALING MATERIAL	PLUNGER	ARMATURE TUBE	O-RING 1	SUBBASE O-RING (EXT.)	SUBBASE O-RING (INT.)	KIT	KIT COMP.
31JN1	31JN1W0V12	FKM	R452061/V	R452074	R990597/V	-	-	KT100W0V25-FJ	I + II + III
	31JN1W0B12	NBR	R452061/B	R452074	R990597/G	-	-	KT100W0B25-FJ	I + II + III
	31JN1W0V15	FKM	R452061/V	R452074	R990597/V	-	-	KT100W0V25-FJ	I + II + III
	31JN1W0B15	NBR	R452061/B	R452074	R990597/G	-	-	KT100W0B25-FJ	I + II + III
	31JN1W0V20	FKM	R452061/V	R452074	R990597/V	-	-	KT100W0V25-FJ	I + II + III
	31JN1W0B20	NBR	R452061/B	R452074	R990597/G	-	-	KT100W0B25-FJ	I + II + III
	31JN1W0V23	FKM	R452061/V	R452074	R990597/V	-	-	KT100W0V25-FJ	I + II + III
31JBM	31JBMW0V12	FKM	R452061/V	R452074	R990597/V	-	-	KT100W0V25-FJ	I + II + III
	31JBMW0B12	NBR	R452061/B	R452074	R990597/G	-	-	KT100W0B25-FJ	I + II + III
31JKB	31JKBW0V12	FKM	R452061/V	R452074	R990597/V	R990557/V	R990169/V	KT100W0V25-FJ	I + II + III
	31JKBW0B12	NBR	R452061/B	R452074	R990597/G	R990557/B	R990169/B	KT100W0B25-FJ	I + II + III
	31JKBW0V23	FKM	R452061/V	R452074	R990597/V	R990557/V	R990169/V	KT100W0V25-FJ	I + II + III
31JKBW0B23	NBR	R452061/B	R452074	R990597/G	R990557/B	R990169/B	KT100W0B25-FJ	I + II + III	

3/2 NC G1/8 EXHAUST

GROUP	VALVE CODE	SEALING MATERIAL	PLUNGER	ARMATURE TUBE	O-RING 1	O-RING 2	KIT	KIT COMP.
31JN1	31JN1X0V12	FKM	R452061/V	R452877	R990597/V	-	-	-
	31JN1X0V12-S	FKM	R452061/V	R452144	R990597/V	-	-	-
	31JN1X0V23	FKM	R452061/V	R452877	R990597/V	-	-	-
	31JN1X0V23-S	FKM	R452061/V	R452144	R990597/V	-	-	-

3/2 NC HOSE CONNECTION EXHAUST

GROUP	VALVE CODE	SEALING MATERIAL	PLUNGER	ARMATURE TUBE	O-RING 1	O-RING 2	KIT	KIT COMP.
31JN1	31JN1XPV12	FKM	R452061/V	R452095	R990597/V	-	KT100XPV25-IJ	I + II + III
	31JN1XPV12-S	FKM	R452061/V	R452198	R990597/V	-	KT100XPV25-FJ	I + II + III
	31JN1XPV20	FKM	R452061/V	R452095	R990597/V	-	KT100XPV25-IJ	I + II + III
	31JN1XPV23	FKM	R452061/V	R452095	R990597/V	-	KT100XPV25-IJ	I + II + III
	31JN1XPV23-S	FKM	R452061/V	R452198	R990597/V	-	KT100XPV25-FJ	I + II + III
31JL1	31JL1XPV12	FKM	R453001/VX	R452999	R990597/VX	-	-	-
	31JL1XPV12-S	FKM	R453001/VX	R452999	R990597/VX	-	-	-
31JL1XPV20-S	FKM	R453001/VX	R452999	R990597/VX	-	-	-	

GROUP	VALVE CODE	SEALING MATERIAL	PLUNGER S/A	ARMATURE TUBE S/A	O-RING 1	SCREW	KIT	KIT COMP.
31JR1	31JR1W0V12-M	FKM	R452061/V	R452074	R990597/V	R450576/V	-	-
	31JR1W0B12-M	NBR	R452061/B	R452074	R990597/G	R450576/G	-	-
	31JR1W0V15-M	FKM	R452061/V	R452074	R990597/V	R450576/V	-	-
	31JR1W0B15-M	NBR	R452061/B	R452074	R990597/G	R450576/G	-	-
	31JR1W0V25-M	FKM	R452061/V	R452074	R990597/V	R450576/V	-	-
31JR1W0B25-M	NBR	R452061/B	R452074	R990597/G	R450576/G	-	-	

3/2 NC M5 EXHAUST MANUAL OPERATOR

GROUP	VALVE CODE	SEALING MATERIAL	PLUNGER	ARMATURE TUBE	O-RING 1	O-RING 2	KIT	KIT COMP.
31JN1	31JN1Y0V12-Z	FKM	R453353/V	R452143	R990597/V	-	-	-
	31JN1Y0B12-Z	NBR	R453353/B	R452143	R990597/G	-	-	-

3/2 NO M5 EXHAUST M5 EXHAUST

GROUP	VALVE CODE	SEALING MATERIAL	PLUNGER	ARMATURE TUBE	O-RING 1	SCREW	KIT	KIT COMP.
31JR1	31JR1Y0V12-ZM	FKM	R453353/V	R452143	R990597/V	R450576/V	-	-
	31JR1Y0B12-ZM	NBR	R453353/B	R452143	R990597/G	R450576/G	-	-
	31JR1W0V15-ZM	FKM	R453353/V	R452143	R990597/V	R450576/V	-	-
	31JR1W0B15-ZM	NBR	R453353/B	R452143	R990597/G	R450576/G	-	-

3/2 NO M5 EXHAUST MANUAL OPERATOR

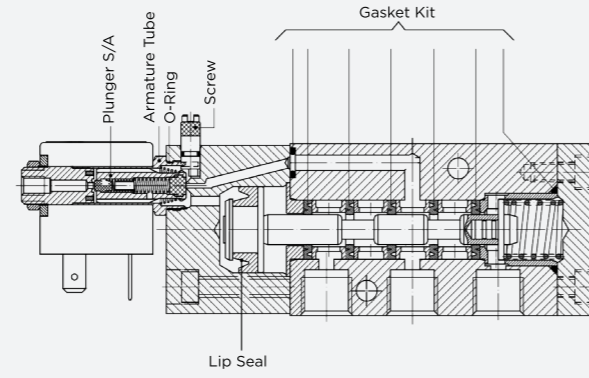
GROUP	VALVE CODE	SEALING MATERIAL	PLUNGER	ARMATURE TUBE	O-RING 1	O-RING 2	KIT	KIT COMP.
31JN1	31JN1W0V12-U	FKM	R452142/V	R452074	R990597/V	-	-	-
	31JN1W0B12-U	NBR	R452142/B	R452074	R990597/G	-	-	-
	31JN1W0V23-U	FKM	R452142/V	R452074	R990597/V	-	-	-
	31JN1W0B23-U	NBR	R452142/B	R452074	R990597/G	-	-	-
31JBM	31JBMW0V12-U	FKM	R452142/V	R452074	R990597/V	-	-	-
	31JBMW0B12-U	NBR	R452142/B	R452074	R990597/G	-	-	-

3/2 U M5 EXHAUST

- OX Replacement of internal parts is not possible for valves used in industrial oxygen service

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51 SERIES



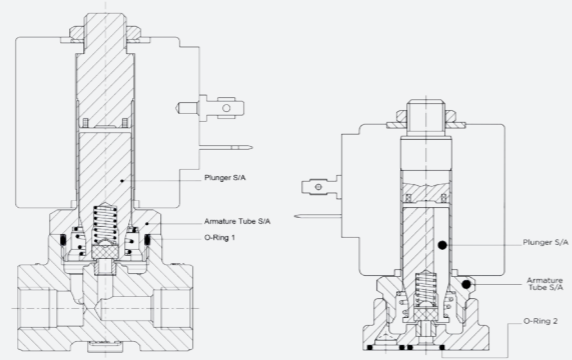
5/2

GROUP	VALVE CODE	SEALING MATERIAL	PLUNGER	ARMATURE TUBE	SCREW	GASKET KIT	LIP SEAL	O-RING
51 Series	512946WOB12-A	NBR	R452061/B	R453230	R453222	R451906/B	R990473/B	R990597/G
	515620WOB12-2	NBR	R452061/B	R453230	R453222	R451906/B	R990473/B	R990597/G

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21A - 21L - 21ALB - 21AP SERIES



2/2 NC FKM SEALING

GROUP	VALVE CODE	SEALING MATERIAL	I II III IV				KIT	KIT COMP.
			PLUNGER	ARMATURE TUBE	O-RING 1	O-RING 2		
21A31	21A31K1V10-T3	FKM	R453273/VX	R450606/D	R992352/VX	-	-	-
	21A31K1V15-T3	FKM	R453273/VX	R450606/D	R992352/VX	-	-	-
	21A31K1V20-T3	FKM	R453273/VX	R450606/D	R992352/VX	-	-	-
	21A31K1V25-T3	FKM	R453273/VX	R450606/D	R992352/VX	-	-	-
	21A31K1V30-T3	FKM	R453273/VX	R450606/D	R992352/VX	-	-	-
21A22	21A22K1V10-T3	FKM	R453273/VX	R450606/D	R992352/VX	-	-	-
	21A22K1V15-T3	FKM	R453273/VX	R450606/D	R992352/VX	-	-	-
	21A22K1V20-T3	FKM	R453273/VX	R450606/D	R992352/VX	-	-	-
	21A22K1V25-T3	FKM	R453273/VX	R450606/D	R992352/VX	-	-	-
	21A22K1V30-T3	FKM	R453273/VX	R450606/D	R992352/VX	-	-	-
21A1B	21A1BK1V15-T3	FKM	R453273/VX	R450606/D	R992352/VX	R990002/S	-	-
	21A1BK1V20-T3	FKM	R453273/VX	R450606/D	R992352/VX	R990002/S	-	-
	21A1BK1V25-T3	FKM	R453273/VX	R450606/D	R992352/VX	R990002/S	-	-
	21A1BK1V30-T3	FKM	R453273/VX	R450606/D	R992352/VX	R990002/S	-	-
	21L11	21L11K1V15-T4	FKM	R450898/VX	R450811	R990000/V	-	-
21L22	21L22K1V15-T4	FKM	R450898/VX	R450811	R990000/V	-	-	-
	21L22K1V40-T4	FKM	R450898/VX	R450811	R990000/V	-	-	-
	21L22K1V55-T4	FKM	R450898/VX	R450811	R990000/V	-	-	-
21AP1	21APIK1V15-T0	FKM	R453273/VX	R450603/D	R990000/V	-	-	-
	21APIK1V20-T0	FKM	R453273/VX	R450603/D	R990000/V	-	-	-
	21APIK1V25-T0	FKM	R453273/VX	R450603/D	R990000/V	-	-	-
	21APIK1V30-T0	FKM	R453273/VX	R450603/D	R990000/V	-	-	-
	21AP2	21AP2K1V15-T0	FKM	R453273/VX	R450603/D	R990000/V	-	-
21APB	21APBK1V15-T0	FKM	R453273/VX	R450603/D	R990000/V	R990002/S	-	-
	21APBK1V20-T0	FKM	R453273/VX	R450603/D	R990000/V	R990002/S	-	-
	21APBK1V25-T0	FKM	R453273/VX	R450603/D	R990000/V	R990002/S	-	-
	21APBK1V30-T0	FKM	R453273/VX	R450603/D	R990000/V	R990002/S	-	-
	21AP5	21AP5K1V15-T0	FKM	R453273/VX	R450603/D	R990000/V	-	-
21AP6	21AP6K1V15-T0	FKM	R453273/VX	R450603/D	R990000/V	-	-	-
	21AP6K1V20-T0	FKM	R453273/VX	R450603/D	R990000/V	-	-	-
	21AP6K1V25-T0	FKM	R453273/VX	R450603/D	R990000/V	-	-	-
	21AP6K1V30-T0	FKM	R453273/VX	R450603/D	R990000/V	-	-	-
	21AP7	21AP7K1V15-T0	FKM	R453273/VX	R450603/D	R990000/V	-	-
21AP7	21AP7K1V20-T0	FKM	R453273/VX	R450603/D	R990000/V	-	-	-
	21AP7K1V30-T0	FKM	R453273/VX	R450603/D	R990000/V	-	-	-

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GROUP	VALVE CODE	SEALING MATERIAL	I II III IV				KIT	KIT COMP.
			PLUNGER	ARMATURE TUBE	O-RING 1	O-RING 2		
21A31	21A31K1R25-T3	FKM	R453145/R	R450606/D	R992352/VX	-	-	-
21A1B	21A1BK1R25-T3	FKM	R453145/R	R450606/D	R992352/VX	R990002/S	-	-
	21APIK1R15-RPT0	FKM	R453145/R	R450603/D	R990000/V	-	-	-
	21APIK1R20-RPT0	FKM	R453145/R	R450603/D	R990000/V	-	-	-
21AP1	21APIK1R25-RPT0	FKM	R453145/R	R450603/D	R990000/V	-	-	-
	21APIK1R30-RPT0	FKM	R453145/R	R450603/D	R990000/V	-	-	-
	21AP2K1R15-RPT0	FKM	R453145/R	R450603/D	R990000/V	-	-	-
21AP2	21AP2K1R20-RPT0	FKM	R453145/R	R450603/D	R990000/V	-	-	-
	21AP2K1R25-RPT0	FKM	R453145/R	R450603/D	R990000/V	-	-	-
	21AP2K1R30-RPT0	FKM	R453145/R	R450603/D	R990000/V	-	-	-
21APB	21APBK1R15-RPT0	FKM	R453145/R	R450603/D	R990000/V	R990002/S	-	-
	21APBK1R20-RPT0	FKM	R453145/R	R450603/D	R990000/V	R990002/S	-	-
	21APBK1R25-RPT0	FKM	R453145/R	R450603/D	R990000/V	R990002/S	-	-
21APB	21APBK1R30-RPT0	FKM	R453145/R	R450603/D	R990000/V	R990002/S	-	-

2/2 NC RUBY SEALING

GROUP	VALVE CODE	SEALING MATERIAL	I II III IV				KIT	KIT COMP.
			PLUNGER	ARMATURE TUBE	O-RING 1	O-RING 2		
21A31	21A31K1V45-WT3	FKM	R450898/VX	R450606/D	R992352/VX	-	-	-
	21A31K1V55-WT3	FKM	R450898/VX	R450606/D	R992352/VX	-	-	-
21A22	21A22K1V45-WT3	FKM	R450898/VX	R450606/D	R992352/VX	-	-	-
	21A22K1V55-WT3	FKM	R450898/VX	R450606/D	R992352/VX	-	-	-
21A1B	21A1BK1V45-WT3	FKM	R450898/VX	R450606/D	R992352/VX	R990002/S	-	-
21L11	21L11K1V40-WT4	FKM	R450898/VX	R450811	R990000/V	-	-	-
21L22	21L22K1V55-WT4	FKM	R450898/VX	R450811	R990000/V	-	-	-

2/2 NC FKM-SEALING IMPROVED PRES. RANGE

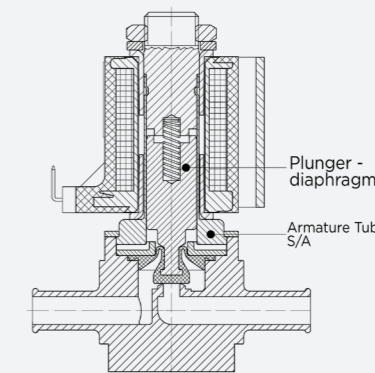
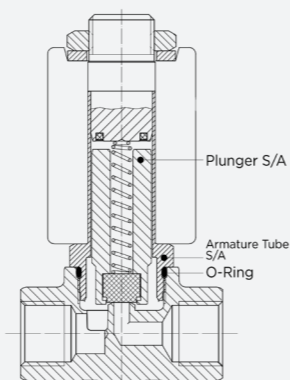
GROUP	VALVE CODE	SEALING MATERIAL	I II III IV				KIT	KIT COMP.
			PLUNGER	ARMATURE TUBE	O-RING 1	O-RING 2		
21A31	21A31Z1V15D-T3	FKM	R450786/V	R450573/D	R990000/V	-	-	-
	21A22Z1V15D-T3	FKM	R450786/V	R450573/D	R990000/V	-	-	-
	21A22Z1V20D-T3	FKM	R450786/V	R450573/D	R990000/V	-	-	-
21A22	21A22Z1V30D-T3	FKM	R450786/V	R450573/D	R990000/V	-	-	-
	21A22Z1V45D-T3	FKM	R450786/V	R450573/D	R990000/V	-	-	-
	21A22Z1V55G-T3	FKM	R450786/V14	R450573/D	R990000/V	-	-	-
21A1B	21A1BZ1V15D-T0	FKM	R450788/V	R450753	R990000/V	R990002/S	-	-
21AP1	21APIZ1V15D-T0	FKM	R450788/V	R450753	R990000/V	R990002/S	-	-
21AP2	21AP2Z1V20D-T0	FKM	R450788/V	R450753	R990000/V	-	-	-
	21AP2Z1V30D-T0	FKM	R450788/V	R450753	R990000/V	-	-	-
21AP2	21AP2Z1V30G-T0	FKM	R450788/V14	R450753	R990000/V	-	-	-

2/2 NO FKM SEALING

- VO Replace column "O-RING 2" with code R990002/V
- 216A For 21A valves with AISI 316 core tube, i.e. 216A..., replace the armature tube code with R453482
- 216AP For 21AP valves with AISI 316 core tube, i.e. 216AP..., replace the armature tube code with R453482



21JN - 21JL - 21JP SERIES



21SBG SERIES

2/2 NC

GROUP	VALVE CODE	SEALING MATERIAL	PLUNGER	ARMATURE TUBE	O-RING 1	O-RING 2	KIT	KIT COMP.
21JN1	21JN1R1V12-T3	FKM	R452867/VX	R452062/D	R990597/VX	-	-	-
	21JN1R1E12-T3	EPDM	R452867/EXW	R452062/D	R990597/EXW	-	-	-
	21JN1R1V23-T3	FKM	R452867/VX	R452062/D	R990597/VX	-	-	-
	21JN1R1E23-T3	EPDM	R452867/EXW	R452062/D	R990597/EXW	-	-	-
21JL1	21JL1R1V12-T4	FKM	R452867/VX	R453417	R990597/VX	-	-	-
	21JL1R1E12-T4	EPDM	R452867/EXW	R453417	R990597/EXW	-	-	-
	21JL1R1V23-T4	FKM	R452867/VX	R453417	R990597/VX	-	-	-
	21JL1R1E23-T4	EPDM	R452867/EXW	R453417	R990597/EXW	-	-	-
21JP1	21JP1R1V12-TO	FKM	R452867/VX	R452062/D	R990597/VX	-	-	-
	21JP1R1E12-TO	EPDM	R452867/EXW	R452062/D	R990597/EXW	-	-	-
	21JP1R1V23-TO	FKM	R452867/VX	R452062/D	R990597/VX	-	-	-
	21JP1R1E23-TO	EPDM	R452867/EXW	R452062/D	R990597/EXW	-	-	-
21JPA	21JP1R1V12-TO	FKM	R452867/VX	R452062/D	R990597/VX	-	-	-
	21JP1R1E12-TO	EPDM	R452867/EXW	R452062/D	R990597/EXW	-	-	-
	21JP1R1V23-TO	FKM	R452867/VX	R452062/D	R990597/VX	-	-	-
	21JP1R1E23-TO	EPDM	R452867/EXW	R452062/D	R990597/EXW	-	-	-
21JPB	21JPB1R1V12-TO	FKM	R452867/VX	R452062/D	R990597/VX	-	-	-
	21JPB1R1E12-TO	EPDM	R452867/EXW	R452062/D	R990597/EXW	-	-	-
	21JPB1R1V23-TO	FKM	R452867/VX	R452062/D	R990597/VX	-	-	-
	21JPB1R1E23-TO	EPDM	R452867/EXW	R452062/D	R990597/EXW	-	-	-
21JPP	21JPP1R1V12-TO	FKM	R452867/VX	R452062/D	R990597/VX	-	-	-
	21JPP1R1E12-TO	EPDM	R452867/EXW	R452062/D	R990597/EXW	-	-	-
	21JPP1R1V23-TO	FKM	R452867/VX	R452062/D	R990597/VX	-	-	-
	21JPP1R1E23-TO	EPDM	R452867/EXW	R452062/D	R990597/EXW	-	-	-
21JP5	21JP5R1V12-TO	FKM	R452867/VX	R452062/D	R990597/VX	-	-	-
	21JP5R1E12-TO	EPDM	R452867/EXW	R452062/D	R990597/EXW	-	-	-
	21JP5R1V23-TO	FKM	R452867/VX	R452062/D	R990597/VX	-	-	-
	21JP5R1E23-TO	EPDM	R452867/EXW	R452062/D	R990597/EXW	-	-	-
21JP6	21JP6R1V12-TO	FKM	R452867/VX	R452062/D	R990597/VX	-	-	-
	21JP6R1E12-TO	EPDM	R452867/EXW	R452062/D	R990597/EXW	-	-	-
	21JP6R1V23-TO	FKM	R452867/VX	R452062/D	R990597/VX	-	-	-
	21JP6R1E23-TO	EPDM	R452867/EXW	R452062/D	R990597/EXW	-	-	-

▪ -216J* For 21J* valves with AISI 316 core tube, i.e. 216JN1..., replace the armature tube code with R452426

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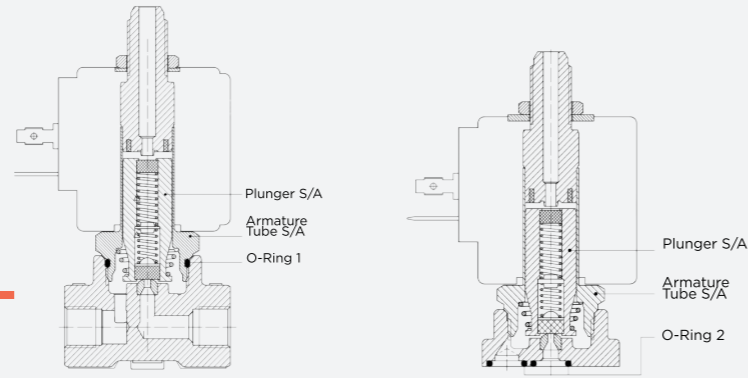
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2/2 NC

GROUP	VALVE CODE	SEALING MATERIAL	PLUNGER - DIAPHRAGM	ARMATURE TUBE	COIL
21SBG	21SBGS4E30_H036	EPDM	R452690/E	R452685	HLR7X024CS
	21SBGS4E50_H036	EPDM	R452690/E	R452685	HLR7X024CS



31A - 31L - 31ALB - 31AP SERIES



3/2 NC - FKM SEALING, G1/8 EXHAUST

GROUP	VALVE CODE	SEALING MATERIAL	PLUNGER	ARMATURE TUBE	O-RING 1	O-RING 2	KIT	KIT COMP.
31A31	31A31A1V10-T3	FKM	R450865/VX	R450944/D	R992352/VX	-	-	-
	31A31A1V15-T3	FKM	R450865/VX	R450944/D	R992352/VX	-	-	-
	31A31A1V20-T3	FKM	R450865/VX	R450944/D	R992352/VX	-	-	-
	31A31A1V25-T3	FKM	R450865/VX	R450944/D	R992352/VX	-	-	-
	31A31A1V30-T3	FKM	R450865/VX	R450944/D	R992352/VX	-	-	-
31A22	31A22A1V10-T3	FKM	R450865/VX	R450944/D	R992352/VX	-	-	-
	31A22A1V15-T3	FKM	R450865/VX	R450944/D	R992352/VX	-	-	-
	31A22A1V20-T3	FKM	R450865/VX	R450944/D	R992352/VX	-	-	-
	31A22A1V25-T3	FKM	R450865/VX	R450944/D	R992352/VX	-	-	-
	31A22A1V30-T3	FKM	R450865/VX	R450944/D	R992352/VX	-	-	-
31A1B	31A1BA1V15-T3	FKM	R450865/VX	R450944/D	R992352/VX	R990002/S	-	-
	31A1BA1V20-T3	FKM	R450865/VX	R450944/D	R992352/VX	R990002/S	-	-
	31A1BA1V25-T3	FKM	R450865/VX	R450944/D	R992352/VX	R990002/S	-	-
	31L	31L1A1V15-T4	FKM	R450865/VX	R453331/D	R990000/V	-	-
	31AP1	31AP1A1V15-T0	FKM	R450865/VX	R451830/D	R990000/V	-	-
31AP1A1V20-T0		FKM	R450865/VX	R451830/D	R990000/V	-	-	-
31AP1A1V25-T0		FKM	R450865/VX	R451830/D	R990000/V	-	-	-
31AP1A1V30-T0		FKM	R450865/VX	R451830/D	R990000/V	-	-	-
31AP2		31AP2A1V15-T0	FKM	R450865/VX	R451830/D	R990000/V	-	-
	31AP2A1V20-T0	FKM	R450865/VX	R451830/D	R990000/V	-	-	-
	31AP2A1V25-T0	FKM	R450865/VX	R451830/D	R990000/V	-	-	-
	31AP2A1V30-T0	FKM	R450865/VX	R451830/D	R990000/V	-	-	-
	31APB	31APBA1V15-T0	FKM	R450865/VX	R451830/D	R990000/V	R990002/S	-
31APBA1V20-T0		FKM	R450865/VX	R451830/D	R990000/V	R990002/S	-	-
31APBA1V25-T0		FKM	R450865/VX	R451830/D	R990000/V	R990002/S	-	-
31APBA1V30-T0		FKM	R450865/VX	R451830/D	R990000/V	R990002/S	-	-
31AP5		31AP5A1V15-T0	FKM	R450865/VX	R451830/D	R990000/V	-	-
	31AP5A1V20-T0	FKM	R450865/VX	R451830/D	R990000/V	-	-	-
	31AP5A1V25-T0	FKM	R450865/VX	R451830/D	R990000/V	-	-	-
	31AP5A1V30-T0	FKM	R450865/VX	R451830/D	R990000/V	-	-	-
	31AP6	31AP6A1V15-T0	FKM	R450865/VX	R451830/D	R990000/V	-	-
31AP6A1V20-T0		FKM	R450865/VX	R451830/D	R990000/V	-	-	-
31AP6A1V25-T0		FKM	R450865/VX	R451830/D	R990000/V	-	-	-
31AP6A1V30-T0		FKM	R450865/VX	R451830/D	R990000/V	-	-	-
31AP7		31AP7A1V15-T0	FKM	R450865/VX	R451830/D	R990000/V	-	-
	31AP7A1V20-T0	FKM	R450865/VX	R451830/D	R990000/V	-	-	-
	31AP7A1V25-T0	FKM	R450865/VX	R451830/D	R990000/V	-	-	-
	31AP7A1V30-T0	FKM	R450865/VX	R451830/D	R990000/V	-	-	-

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GROUP	VALVE CODE	SEALING MATERIAL	PLUNGER	ARMATURE TUBE	O-RING 1	O-RING 2	KIT	KIT COMP.
31A31	31A31HLV10-T3	FKM	R450865/VX	R452463/DHL	R992352/VX	-	-	-
	31A31HLV15-T3	FKM	R450865/VX	R452463/DHL	R992352/VX	-	-	-
	31A31HLV20-T3	FKM	R450865/VX	R452463/DHL	R992352/VX	-	-	-
	31A31HLV25-T3	FKM	R450865/VX	R452463/DHL	R992352/VX	-	-	-
	31A31HLV30-T3	FKM	R450865/VX	R452463/DHL	R992352/VX	-	-	-
31A22	31A22HLV10-T3	FKM	R450865/VX	R452463/DHL	R992352/VX	-	-	-
	31A22HLV15-T3	FKM	R450865/VX	R452463/DHL	R992352/VX	-	-	-
	31A22HLV20-T3	FKM	R450865/VX	R452463/DHL	R992352/VX	-	-	-
	31A22HLV25-T3	FKM	R450865/VX	R452463/DHL	R992352/VX	-	-	-
	31A22HLV30-T3	FKM	R450865/VX	R452463/DHL	R992352/VX	-	-	-
31A1B	31A1BHLV15-T3	FKM	R450865/VX	R452463/DHL	R992352/VX	R990002/S	-	-
	31A1BHLV20-T3	FKM	R450865/VX	R452463/DHL	R992352/VX	R990002/S	-	-
	31A1BHLV25-T3	FKM	R450865/VX	R452463/DHL	R992352/VX	R990002/S	-	-
	31A1BHLV30-T3	FKM	R450865/VX	R452463/DHL	R992352/VX	R990002/S	-	-
	31L	31L1HLV15-T4	FKM	R450865/VX	R453584/D	R990000/V	-	-
31AP1	31AP1HLV15-T0	FKM	R450865/VX	R453143/D	R990000/V	-	-	-
	31AP1HLV20-T0	FKM	R450865/VX	R453143/D	R990000/V	-	-	-
	31AP1HLV25-T0	FKM	R450865/VX	R453143/D	R990000/V	-	-	-
	31AP1HLV30-T0	FKM	R450865/VX	R453143/D	R990000/V	-	-	-
	31AP2	31AP2HLV15-T0	FKM	R450865/VX	R453143/D	R990000/V	-	-
31AP2HLV20-T0		FKM	R450865/VX	R453143/D	R990000/V	-	-	-
31AP2HLV25-T0		FKM	R450865/VX	R453143/D	R990000/V	-	-	-
31AP2HLV30-T0		FKM	R450865/VX	R453143/D	R990000/V	-	-	-
31APB		31APBHLV15-T0	FKM	R450865/VX	R453143/D	R990000/V	R990002/S	-
	31APBHLV20-T0	FKM	R450865/VX	R453143/D	R990000/V	R990002/S	-	-
	31APBHLV25-T0	FKM	R450865/VX	R453143/D	R990000/V	R990002/S	-	-
	31APBHLV30-T0	FKM	R450865/VX	R453143/D	R990000/V	R990002/S	-	-
	31AP5	31AP5HLV15-T0	FKM	R450865/VX	R453143/D	R990000/V	-	-
31AP5HLV20-T0		FKM	R450865/VX	R453143/D	R990000/V	-	-	-
31AP5HLV25-T0		FKM	R450865/VX	R453143/D	R990000/V	-	-	-
31AP5HLV30-T0		FKM	R450865/VX	R453143/D	R990000/V	-	-	-
31AP6		31AP6HLV15-T0	FKM	R450865/VX	R453143/D	R990000/V	-	-
	31AP6HLV20-T0	FKM	R450865/VX	R453143/D	R990000/V	-	-	-
	31AP6HLV25-T0	FKM	R450865/VX	R453143/D	R990000/V	-	-	-
	31AP6HLV30-T0	FKM	R450865/VX	R453143/D	R990000/V	-	-	-
	31AP7	31AP7HLV15-T0	FKM	R450865/VX	R453143/D	R990000/V	-	-
31AP7HLV20-T0		FKM	R450865/VX	R453143/D	R990000/V	-	-	-
31AP7HLV25-T0		FKM	R450865/VX	R453143/D	R990000/V	-	-	-
31AP7HLV30-T0		FKM	R450865/VX	R453143/D	R990000/V	-	-	-

3/2 NC - FKM SEALING, Ø 6 HOSE EXHAUST

3/2 NC - RUBY SEALING, G1/8 EXHAUST

GROUP	VALVE CODE	SEALING MATERIAL	I		II		III		IV	
			PLUNGER	ARMATURE TUBE	O-RING 1	O-RING 2	KIT	KIT COMP.		
31A31	31A31AIR10-T3	RUBY	R452835/R	R450944/D	R992352/VX	-	-	-	-	
	31A31AIR15-T3	RUBY	R452835/R	R450944/D	R992352/VX	-	-	-	-	
	31A31AIR20-T3	RUBY	R452835/R	R450944/D	R992352/VX	-	-	-	-	
	31A31AIR25-T3	RUBY	R452835/R	R450944/D	R992352/VX	-	-	-	-	
	31A31AIR30-T3	RUBY	R452835/R	R450944/D	R992352/VX	-	-	-	-	
31A22	31A22AIR10-T3	RUBY	R452835/R	R450944/D	R992352/VX	-	-	-	-	
	31A22AIR15-T3	RUBY	R452835/R	R450944/D	R992352/VX	-	-	-	-	
	31A22AIR20-T3	RUBY	R452835/R	R450944/D	R992352/VX	-	-	-	-	
	31A22AIR25-T3	RUBY	R452835/R	R450944/D	R992352/VX	-	-	-	-	
31A1B	31A1BAIR15-T3	RUBY	R452835/R	R450944/D	R992352/VX	R990002/S	-	-	-	
	31A1BAIR20-T3	RUBY	R452835/R	R450944/D	R992352/VX	R990002/S	-	-	-	
	31A1BAIR25-T3	RUBY	R452835/R	R450944/D	R992352/VX	R990002/S	-	-	-	
	31A1BAIR30-T3	RUBY	R452835/R	R450944/D	R992352/VX	R990002/S	-	-	-	
31AP1	31APIAIR15-RPTO	RUBY	R452835/R	R451830/D	R990000/V	-	-	-	-	
	31APIAIR20-RPTO	RUBY	R452835/R	R451830/D	R990000/V	-	-	-	-	
	31APIAIR25-RPTO	RUBY	R452835/R	R451830/D	R990000/V	-	-	-	-	
	31APIAIR30-RPTO	RUBY	R452835/R	R451830/D	R990000/V	-	-	-	-	
31AP2	31AP2AIR15-RPTO	RUBY	R452835/R	R451830/D	R990000/V	-	-	-	-	
	31AP2AIR20-RPTO	RUBY	R452835/R	R451830/D	R990000/V	-	-	-	-	
	31AP2AIR25-RPTO	RUBY	R452835/R	R451830/D	R990000/V	-	-	-	-	
	31AP2AIR30-RPTO	RUBY	R452835/R	R451830/D	R990000/V	-	-	-	-	
31APB	31APBAIR15-RPTO	RUBY	R452835/R	R451830/D	R990000/V	R990002/S	-	-	-	
	31APBAIR20-RPTO	RUBY	R452835/R	R451830/D	R990000/V	R990002/S	-	-	-	
	31APBAIR25-RPTO	RUBY	R452835/R	R451830/D	R990000/V	R990002/S	-	-	-	
	31APBAIR30-RPTO	RUBY	R452835/R	R451830/D	R990000/V	R990002/S	-	-	-	
31AP5	31AP5AIR15-RPTO	RUBY	R452835/R	R451830/D	R990000/V	-	-	-	-	
	31AP5AIR20-RPTO	RUBY	R452835/R	R451830/D	R990000/V	-	-	-	-	
	31AP5AIR25-RPTO	RUBY	R452835/R	R451830/D	R990000/V	-	-	-	-	
	31AP5AIR30-RPTO	RUBY	R452835/R	R451830/D	R990000/V	-	-	-	-	
31AP6	31AP6AIR15-RPTO	RUBY	R452835/R	R451830/D	R990000/V	-	-	-	-	
	31AP6AIR20-RPTO	RUBY	R452835/R	R451830/D	R990000/V	-	-	-	-	
	31AP6AIR25-RPTO	RUBY	R452835/R	R451830/D	R990000/V	-	-	-	-	
	31AP6AIR30-RPTO	RUBY	R452835/R	R451830/D	R990000/V	-	-	-	-	
31AP7	31AP7AIR15-RPTO	RUBY	R452835/R	R451830/D	R990000/V	-	-	-	-	
	31AP7AIR20-RPTO	RUBY	R452835/R	R451830/D	R990000/V	-	-	-	-	
	31AP7AIR25-RPTO	RUBY	R452835/R	R451830/D	R990000/V	-	-	-	-	
31AP7	31AP7AIR30-RPTO	RUBY	R452835/R	R451830/D	R990000/V	-	-	-	-	

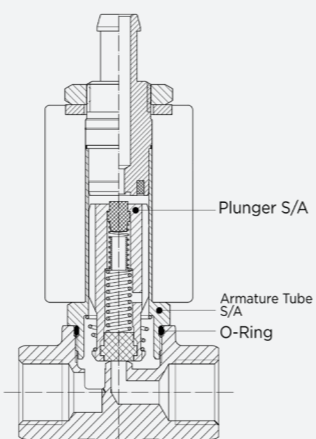
-V Replace column "PLUNGER S/A" with code R453258/RVX
 -VO Replace column "PLUNGER S/A" with code R453258/RVX and replace column "O-RING 2" with code R990002/VV

3/2 NC - RUBY SEALING, Ø 6 HOSE EXHAUST

GROUP	VALVE CODE	SEALING MATERIAL	I		II		III		IV	
			PLUNGER	ARMATURE TUBE	O-RING 1	O-RING 2	KIT	KIT COMP.		
31A31	31A31HLIR10-T3	RUBY	R452835/R	R452463/DHL	R992352/VX	-	-	-	-	
	31A31HLIR15-T3	RUBY	R452835/R	R452463/DHL	R992352/VX	-	-	-	-	
	31A31HLIR20-T3	RUBY	R452835/R	R452463/DHL	R992352/VX	-	-	-	-	
	31A31HLIR25-T3	RUBY	R452835/R	R452463/DHL	R992352/VX	-	-	-	-	
	31A31HLIR30-T3	RUBY	R452835/R	R452463/DHL	R992352/VX	-	-	-	-	
31A22	31A22HLIR10-T3	RUBY	R452835/R	R452463/DHL	R992352/VX	-	-	-	-	
	31A22HLIR15-T3	RUBY	R452835/R	R452463/DHL	R992352/VX	-	-	-	-	
	31A22HLIR20-T3	RUBY	R452835/R	R452463/DHL	R992352/VX	-	-	-	-	
	31A22HLIR25-T3	RUBY	R452835/R	R452463/DHL	R992352/VX	-	-	-	-	
31A1B	31A1BHLIR15-T3	RUBY	R452835/R	R452463/DHL	R992352/VX	R990002/S	-	-	-	
	31A1BHLIR20-T3	RUBY	R452835/R	R452463/DHL	R992352/VX	R990002/S	-	-	-	
	31A1BHLIR25-T3	RUBY	R452835/R	R452463/DHL	R992352/VX	R990002/S	-	-	-	
	31A1BHLIR30-T3	RUBY	R452835/R	R452463/DHL	R992352/VX	R990002/S	-	-	-	
31AP1	31APIHLIR15-RPTO	RUBY	R452835/R	R453143/D	R990000/V	-	-	-	-	
	31APIHLIR20-RPTO	RUBY	R452835/R	R453143/D	R990000/V	-	-	-	-	
	31APIHLIR25-RPTO	RUBY	R452835/R	R453143/D	R990000/V	-	-	-	-	
	31APIHLIR30-RPTO	RUBY	R452835/R	R453143/D	R990000/V	-	-	-	-	
31AP2	31AP2HLIR15-RPTO	RUBY	R452835/R	R453143/D	R990000/V	-	-	-	-	
	31AP2HLIR20-RPTO	RUBY	R452835/R	R453143/D	R990000/V	-	-	-	-	
	31AP2HLIR25-RPTO	RUBY	R452835/R	R453143/D	R990000/V	-	-	-	-	
	31AP2HLIR30-RPTO	RUBY	R452835/R	R453143/D	R990000/V	-	-	-	-	
31APB	31APBHLIR15-RPTO	RUBY	R452835/R	R453143/D	R990000/V	R990002/S	-	-	-	
	31APBHLIR20-RPTO	RUBY	R452835/R	R453143/D	R990000/V	R990002/S	-	-	-	
	31APBHLIR25-RPTO	RUBY	R452835/R	R453143/D	R990000/V	R990002/S	-	-	-	
	31APBHLIR30-RPTO	RUBY	R452835/R	R453143/D	R990000/V	R990002/S	-	-	-	
31AP5	31AP5HLIR15-RPTO	RUBY	R452835/R	R453143/D	R990000/V	-	-	-	-	
	31AP5HLIR20-RPTO	RUBY	R452835/R	R453143/D	R990000/V	-	-	-	-	
	31AP5HLIR25-RPTO	RUBY	R452835/R	R453143/D	R990000/V	-	-	-	-	
	31AP5HLIR30-RPTO	RUBY	R452835/R	R453143/D	R990000/V	-	-	-	-	
31AP6	31AP6HLIR15-RPTO	RUBY	R452835/R	R453143/D	R990000/V	-	-	-	-	
	31AP6HLIR20-RPTO	RUBY	R452835/R	R453143/D	R990000/V	-	-	-	-	
	31AP6HLIR25-RPTO	RUBY	R452835/R	R453143/D	R990000/V	-	-	-	-	
	31AP6HLIR30-RPTO	RUBY	R452835/R	R453143/D	R990000/V	-	-	-	-	
31AP7	31AP7HLIR15-RPTO	RUBY	R452835/R	R453143/D	R990000/V	-	-	-	-	
	31AP7HLIR20-RPTO	RUBY	R452835/R	R453143/D	R990000/V	-	-	-	-	
	31AP7HLIR25-RPTO	RUBY	R452835/R	R453143/D	R990000/V	-	-	-	-	
31AP7	31AP7HLIR30-RPTO	RUBY	R452835/R	R453143/D	R990000/V	-	-	-	-	



31JN - 31JL - 31JP SERIES



3/2 NC, HOSE EXHAUST

GROUP	VALVE CODE	SEALING MATERIAL					KIT	KIT COMP.
			I	II	III	IV		
			PLUNGER	ARMATURE TUBE	O-RING 1	O-RING 2		
31JN1	31JN1XP1V12-ST3	FKM	R453271/VX	R452198/D	R990597/VX	-	-	-
	31JN1XP1V12-T3	FKM	R453271/VX	R452095/D	R990597/VX	-	-	-
	31JN1XP1V20-ST3	FKM	R453271/VX	R452198/D	R990597/VX	-	-	-
	31JN1XP1V20-T3	FKM	R453271/VX	R452095/D	R990597/VX	-	-	-
	31JN1XP1V23-ST3	FKM	R453271/VX	R452198/D	R990597/VX	-	-	-
31JL1	31JL1XP1V12-ST4	FKM	R453001/VX	R453070	R990597/VX	-	-	-
	31JL1XP1V12-T4	FKM	R453001/VX	R452999	R990597/VX	-	-	-
	31JL1XP1V20-ST4	FKM	R453001/VX	R453070	R990597/VX	-	-	-
	31JL1XP1V12-ST0	FKM	R452949/VX	R452198/D	R990597/VX	-	-	-
	31JL1XP1V12-T0	FKM	R452949/VX	R452095/D	R990597/VX	-	-	-
31JP1	31JP1XP1V23-ST0	FKM	R452949/VX	R452198/D	R990597/VX	-	-	-
	31JP1XP1V23-T0	FKM	R452949/VX	R452095/D	R990597/VX	-	-	-
	31JP1XP1V12-ST0	FKM	R452949/VX	R452198/D	R990597/VX	-	-	-
	31JP1XP1V12-T0	FKM	R452949/VX	R452095/D	R990597/VX	-	-	-
	31JP1XP1V23-ST0	FKM	R452949/VX	R452198/D	R990597/VX	-	-	-
31JPA	31JPAXP1V12-ST0	FKM	R452949/VX	R452095/D	R990597/VX	-	-	-
	31JPAXP1V12-T0	FKM	R452949/VX	R452198/D	R990597/VX	-	-	-
	31JPAXP1V23-ST0	FKM	R452949/VX	R452095/D	R990597/VX	-	-	-
	31JPAXP1V23-T0	FKM	R452949/VX	R452198/D	R990597/VX	-	-	-
	31JPAXP1V12-ST0	FKM	R452949/VX	R452095/D	R990597/VX	-	-	-
31JPB	31JPBXP1V12-ST0	FKM	R452949/VX	R452198/D	R990597/VX	-	-	-
	31JPBXP1V12-T0	FKM	R452949/VX	R452095/D	R990597/VX	-	-	-
	31JPBXP1V23-ST0	FKM	R452949/VX	R452198/D	R990597/VX	-	-	-
	31JPBXP1V23-T0	FKM	R452949/VX	R452095/D	R990597/VX	-	-	-
	31JPBXP1V12-ST0	FKM	R452949/VX	R452198/D	R990597/VX	-	-	-
31JPP	31JPPXP1V12-ST0	FKM	R452949/VX	R452095/D	R990597/VX	-	-	-
	31JPPXP1V12-T0	FKM	R452949/VX	R452198/D	R990597/VX	-	-	-
	31JPPXP1V23-ST0	FKM	R452949/VX	R452095/D	R990597/VX	-	-	-
	31JPPXP1V23-T0	FKM	R452949/VX	R452198/D	R990597/VX	-	-	-
	31JPPXP1V12-ST0	FKM	R452949/VX	R452095/D	R990597/VX	-	-	-
31JP5	31JP5XP1V12-ST0	FKM	R452949/VX	R452198/D	R990597/VX	-	-	-
	31JP5XP1V23-ST0	FKM	R452949/VX	R452198/D	R990597/VX	-	-	-
	31JP5XP1V12-T0	FKM	R452949/VX	R452095/D	R990597/VX	-	-	-
31JP6	31JP6XP1V12-ST0	FKM	R452949/VX	R452198/D	R990597/VX	-	-	-
	31JP6XP1V23-ST0	FKM	R452949/VX	R452198/D	R990597/VX	-	-	-

▪ -316J* For 31J* valves with AISI 316 core tube, i.e. 316JN1..., replace the armature tube code with R453483

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